Massachusetts Genetic Bill of Rights: Chipping Away at Genetic Privacy

"[T]he privacy and dignity of our citizens is being whittled away by sometimes imperceptible steps. Taken individually, each step may be of little consequence. But when viewed as a whole, there begins to emerge a society quite unlike any we have seen—a society in which government may intrude into the secret regions of man's life at will."[1]

I. INTRODUCTION

The average human loses between forty and one hundred strands of hair every day.[2] Humans make one liter of saliva each day.[3] In a lifetime, the average human sheds about forty pounds of skin.[4] Hair, skin, and saliva are just a few ways in which individuals leave behind traces of their identity in the form of deoxyribonucleic acid (DNA).[5] DNA has become an irrefutable method for identifying a person.[6] In essence, humans are constantly leaving traces of their identity everywhere they go.[7]

In the past decade, DNA has transformed criminal procedure jurisprudence.[8] Law enforcement officers and prosecutors now rely heavily on DNA to solve

1. Osborn v. United States, 385 U.S. 323, 343 (1966) (Douglas, J., dissenting).

2. *See Human Facts*, SCIENCE FACTS, http://www.science-facts.com/quick-facts/amazing-human-facts/ (last visited Feb. 20, 2012) (stating body facts about human hair).

3. *See Amazing Medical Facts of the Body*, MEDINDIA, http://www.medindia.net/facts/index.asp (last visited Apr. 15, 2012) (listing various body facts).

4. *See* SCIENCE FACTS, *supra* note 2 (stating body facts about human skin).

5. *See* Robert C. Green & George J. Annas, *The Genetic Privacy of Presidential Candidates*, 359 NEW ENG. J. MED. 2192, 2192-93 (2008), *available at* http://www.nejm.org/doi/full/10.1056/NEJMp0808100 (describing ease of obtaining genetic information). "Sufficient DNA for amplification and analysis can be obtained from loose hairs, coffee cups, discarded utensils, or even a handshake." *Id.* at 2192.

6. *See* Martinez v. State, 549 So. 2d 694, 695 (Fla. 1989) (summarizing admissibility of DNA evidence at trial to prove identity). Courts generally admit DNA evidence to prove identification based on the principle that no two people share exactly the same genetic code. *Id.*; *see also* Commonwealth v. Lanigan, 641 N.E.2d 1342, 1350 (Mass. 1994) (holding expert testimony regarding probability of DNA match reliable and admissible).

7. *See* Eriq Gardner, *Gene Swipe: Few DNA Labs Know Whether Chromosomes Are Yours or If You Stole Them*, 97 A.B.A. J. 50, 51 (2011) (exposing frequency at which humans leave traces of DNA).

8. *See* Anna Stolley Persky, *An Arresting Development: Courts Split over DNA Testing for Those Merely Charged with a Crime*, 98 A.B.A. J. 15, 15 (2012) (stating crucial role DNA testing plays in crime solving).

crimes.[9] DNA reveals unique genetic information about an individual's race, ethnicity, and medical risks for diseases such as breast cancer or the risk of having a child with cystic fibrosis.[10] Access to a person's DNA provides a dangerously intimate blueprint of a person's body.[11] If misused, DNA information could cause a person to be stigmatized, discriminated against, or targeted for criminal prosecution.[12] Some scientists have even proffered the idea of a behavioral gene predisposing an individual to a tendency to commit crimes.[13] Easy access to DNA exposes an individual's most private and intimate information to the world.[14]

As genetic information becomes increasingly easy to obtain, it renews the timeless debate over precisely which circumstances trigger an individual's right to privacy.[15] An individual's right to be left alone has deep roots in English common law, but it continues to be the subject of contentious legal debate today.[16] Although advancements in science and technology have many advantages, these advancements can sometimes encroach upon individual privacy rights.[17] Unless DNA is protected by law, government access to an individual's genetic information will greatly undermine Americans' Fourth Amendment rights.[18] In response to the dire need to protect an individual's private genetic information, the Massachusetts Legislature introduced a Genetic Bill of Rights (GBR) that would establish property and privacy rights for

9. *See* Aaron P. Stevens, Note, *Arresting Crime: Expanding the Scope of DNA Databases in America*, 79 TEX. L. REV. 921, 922 (2001) (recognizing increasing role of DNA in law enforcement). DNA is "one of the most important tools in the arsenal of United States law enforcement." *Id.* at 922.

10. *See* Sonia M. Suter, *Disentangling Privacy from Property: Toward a Deeper Understanding of Genetic Privacy*, 72 GEO. WASH. L. REV. 737, 738-39 (2004) (emphasizing abundance of personal information revealed by DNA).

11. *See* Michael J. Markett, Note, *Genetic Diaries: An Analysis of Privacy Protection in DNA Data Banks*, 30 SUFFOLK U. L. REV. 185, 208 (1996) (highlighting extremely personal nature of genetic information). "The gene sequences encoded on one's DNA reveal highly personal and potentially stigmatizing facts about the donor such as the donor's and his or her family members' predisposition to disease." *Id.*

12. *See* Elizabeth E. Joh, *Reclaiming "Abandoned" DNA: The Fourth Amendment and Genetic Privacy*, 100 NW. U. L. REV. 857, 874-75 (2006) (cautioning against potential misuse of DNA by law enforcement).

13. *See* Erica Beecher-Monas & Edgar Garcia-Rill, *Genetic Predictions of Future Dangerousness: Is There a Blueprint for Violence?*, 69 LAW & CONTEMP. PROBS. 301, 301-02 (2006) (examining possible link between crime and genetics). Genetics already are used to determine future dangerousness in death penalty sentencing and commitment proceedings for sexually violent defendants. *Id.*

14. *See* Joh, *supra* note 12, at 874 (describing ability of small sample of DNA to reveal individual's entire genetic code). A skin swab for DNA is comparable to "a microchip containing an entire library's worth of information." *Id.*

15. *See id.* at 862-63 (considering whether individual has Fourth Amendment expectation of privacy in "abandoned" DNA).

16. *See* David A. Sklansky, *The Fourth Amendment and Common Law*, 100 COLUM. L. REV. 1739, 1740-41 (2000) (studying impact of English common law on writing and interpretation of Fourth Amendment).

17. *See* Suter, *supra* note 10, at 738 (characterizing scientific advances in DNA as both "awe inspiring and frightening").

18. *See* Persky, *supra* note 8, at 16 (arguing DNA deserves constitutional protections).

genetic information and genetic material.[19]

This Note explores the proposed Genetic Bill of Rights—including the current proposed version's flaws—and makes recommendations for a more effective version.[20] Part II.A summarizes Fourth Amendment history and the basis of the constitutionally implied right to privacy.[21] Part II.B presents different legal theories for protecting DNA.[22] Part II.C studies and explains the proposed Massachusetts Genetic Bill of Rights.[23] Part II.D studies the application of conflict of laws in criminal procedure.[24] With conflict-of-laws principles as a foundation, Part III analyzes the effectiveness and validity of the proposed Genetic Bill of Rights.[25]

II. HISTORY

A. The Fourth Amendment

1. The Origins of the Fourth Amendment

One of the most valued amendments to the United States Constitution is the Fourth Amendment, which protects the right of the people to be free from unreasonable searches and seizures by requiring law enforcement officers to obtain a warrant based on probable cause before executing a search.[26] An understanding of the Fourth Amendment requires an appreciation of its history and origins in colonial America.[27] The inclusion of the Fourth Amendment's

19. *See* An Act to Create a Genetic Bill of Rights, S. 1080, 187th Gen. Ct. (Mass. 2011) (proposing Massachusetts protection of DNA through property and privacy rights). The legislative proposal requires consent from an individual before collecting his DNA and creates a right to privacy and property with respect to an individual's genetic information. *Id.*

20. *See infra* Part III.A-B (analyzing flaws in current proposed GBR).

21. *See infra* Part II.A (discussing Fourth Amendment history and recognition of constitutional right to privacy).

22. *See infra* Part II.B (evaluating different legal theories for protecting genetic information).

23. *See infra* Part II.C (examining provisions of proposed legislation).

24. *See infra* Part II.D (examining approaches to resolving conflict of laws in criminal procedure).

25. *See infra* Part III (critiquing Massachusetts proposed GBR and suggesting provisions for ideal GBR).

26. *See* U.S. CONST. amend. IV (guaranteeing freedom from unreasonable searches and seizures). The Fourth Amendment states:

> The right of the people to be secure in their persons, houses, papers, and effects, against unreasonable searches and seizures, shall not be violated, and no Warrants shall issue, but upon probable cause, supported by Oath or affirmation, and particularly describing the place to be searched, and the persons or things to be seized.

Id.; *see also* Olmstead v. United States, 277 U.S. 438, 478 (1928) (Brandeis, J., dissenting) (recognizing Fourth Amendment most highly valued by civilized men). In *Olmstead*, the Court held that wiretapping private telephone conversations without a warrant does not violate the Fourth Amendment. *Olmstead*, 277 U.S. at 469. In his dissenting opinion, Justice Brandeis wrote that "the right to be let alone [is] the most comprehensive of rights and the right most valued by civilized men." *Id.* at 478.

27. *See* Boyd v. United States, 116 U.S. 616, 630-31 (1886) (referencing historical context of Fourth

protection from unreasonable searches and seizures was largely influenced by Great Britain's use of overly broad search warrants, warrantless searches, and writs of assistance in the 1760s.[28] In two cases, the King authorized the ransacking of the homes of citizens charged with seditious libel, as well as the seizure of their books and papers.[29] Another case involved British customs inspectors searching Boston merchants pursuant to blanket search warrants, known as writs of assistance, stating that the King's agents could search anywhere smuggled goods might be found.[30]

James Otis defended the Boston merchants and presented a speech that is credited as the inspiration for the Fourth Amendment.[31] In his speech, Otis criticized the writs as "the worst instrument of arbitrary power," and argued that they "placed the liberty of every man in the hands of every petty officer."[32] John Adams, one of the authors of the Constitution, was profoundly influenced by Otis's speech and stated in response: "Then and there was the first scene of the first act of opposition to the arbitrary claims of Great Britain. Then and there the child Independence was born."[33] This historical context behind the Fourth Amendment reveals its purpose: to safeguard against an abusive government that excessively intrudes upon an individual's privacy.[34]

Amendment to aid in interpretation and application). In *Boyd*, the Court held the government's demanding of a man's private papers, for use against him in court, is a search and seizure within the meaning of the Fourth Amendment. *Id.* at 622. Justice Bradley wrote in his opinion that the intent of the Fourth Amendment is best ascertained by examining the historical controversies that occurred in England and the colonies concerning unreasonable searches and seizures at the time the amendment was written. *Id.* at 624-25.

28. *See* Sklansky, *supra* note 16, at 1743, 1789-91, 1799-1800 (observing Supreme Court decisions referencing historical context of Fourth Amendment). Justices Bradley, Brandeis, and Frankfurter all relied upon instances where forms of search and seizure were condemned leading up to the American Revolution. *Id.*

29. *See* Wilkes v. Wood, (1763) 98 Eng. Rep. 489 (C.P.) 498 (condemning overly broad search warrant for defendant's house). In *Wilkes*, the defendant was charged with libeling King George III in pamphlets. *Id.* at 490, 498. The King issued a warrant that did not list any names. *Id.* The defendant's home was broken into and his private papers were seized. *Id.* at 491; *see also* Entick v. Carrington, (1765) 95 Eng. Rep. 807 (K.B.) 818 (condemning warrantless searches and seizures). In *Entick*, the defendant was charged with seditious libel of the King, who then ordered a search of the defendant's home and seized his papers with an overly broad search warrant. *Id.* at 810. The court also noted that "half the kingdom" would likely be guilty of having libel in their private possession. *Id.* at 818.

30. *See* Joseph A. Grasso, Jr., *"John Adams Made Me Do It": Judicial Federalism, Judicial Chauvinism, and Article 14 of Massachusetts' Declaration of Rights*, 77 MISS. L.J. 315, 319-20 (2007) (describing "arbitrary power" granted by writs of assistance). The writs of assistance cases involved British customs officials who inspected ships, businesses, and homes for evidence of goods smuggled into the colonies by merchants to avoid taxes. *Id.* at 332-33 & n.102. The writs of assistance used by British inspectors were nothing more than general search warrants and did not require a showing of cause. *Id.* at n.102.

31. *See id.* at 319 (criticizing writs of assistance).

32. *Id.* (describing James Otis's argument in legal papers).

33. *See* Akhil Reed Amar, *The Fourth Amendment, Boston, and the Writs of Assistance*, 30 SUFFOLK U. L. REV. 53, 76 (1996) (quoting John Adams's response to Otis's speech at writs of assistance case).

34. *See* Boyd v. United States, 116 U.S. 616, 626-27 (1886) (tracing intent and purpose of Fourth Amendment). Justice Bradley stated in the Court's opinion that *Wilkes*, *Entick*, and the writs of assistance cases were unquestionably in the minds of the framers of the Fourth Amendment to the United States Constitution. *Id.*

2. The Development and Application of the Fourth Amendment

It was not until 1961, when the Supreme Court ruled in *Mapp v. Ohio*[35] that state governments are bound by the Fourth Amendment, that its protections became truly effective.[36] Under current case law, a Fourth Amendment search occurs when a government agent gathers information where an individual has a reasonable expectation of privacy.[37] Whether an individual's expectation of privacy is reasonable depends on whether society is prepared to recognize it as such.[38] A Fourth Amendment seizure occurs when a government agent exercises control over a person or thing.[39]

If a government agent plans to conduct a Fourth Amendment search and seizure, he must first obtain a search warrant from a neutral magistrate.[40] A valid search warrant must be based on probable cause, which requires that the officer demonstrate that under the totality of the circumstances, there is a fair probability that evidence of a crime will be found in a particular place.[41] A

35. 367 U.S. 643 (1961).

36. *See id.* at 655-56 (holding Fourth Amendment applies to state criminal procedure through Due Process Clause). In *Mapp*, the Court held that unconstitutionally seized evidence by state officials should be excluded as evidence in a state criminal case. *Id.*; *see also* Elkins v. United States, 364 U.S. 206, 223 (1960) (holding unconstitutionally obtained evidence inadmissible in federal and state courts); Weeks v. United States, 232 U.S. 383, 394, 399 (1914) (holding exclusionary rule applies to federal cases).

37. *See* Burdeau v. McDowell, 256 U.S. 465, 475 (1921) (holding Fourth Amendment protects only against governmental conduct). The Court in *Burdeau* held that the Fourth Amendment does not apply to evidence obtained by a private party acting independently of police direction. *Id.* at 476.

38. *See* Katz v. United States, 389 U.S. 347, 359 (1967) (clarifying areas subject to Fourth Amendment protection). The defendant in *Katz* used a public telephone booth to transmit illegal gambling wagers. *Id.* at 348. The Federal Bureau of Investigation (FBI) recorded the defendant's conversation by placing a transmitter on the exterior of the booth. *Id.* The *Katz* Court held that the FBI recording was an unconstitutional search because the defendant had a reasonable expectation of privacy in his phone conversation. *Id.* at 359. In Justice Harlan's concurring opinion, he explained that the reasonable expectation of privacy determination "is a twofold requirement, first that a person have exhibited an actual (subjective) expectation of privacy and, second, that the expectation be one that society is prepared to recognize as 'reasonable.'" *Id.* at 361; *see also* Kyllo v. United States, 533 U.S. 27, 40 (2001) (holding use of sense enhancing technology to view inside home from exterior unconstitutional search); Dow Chem. Co. v. United States, 476 U.S. 227, 238-39 (1986) (holding use of powerful cameras generally available to public not search).

39. *See* California v. Hodari D., 499 U.S. 621, 626 (1991) (determining what precisely constitutes seizure under Fourth Amendment). The Court considered whether drugs were fruits of an unlawful seizure when the defendant tossed the drugs just before the police tackled him. *Id.* at 623. The Court held that a seizure requires a physical application of force by an officer or a submission to an officer's show of force. *Id.* at 626. The Court reasoned that there was no seizure of the drugs because the defendant tossed the crack cocaine before the officer tackled him. *Id.* at 625.

40. *See* U.S. CONST. amend. IV (explaining requirements for valid warrant); *see also* Illinois v. Gates, 462 U.S. 213, 238 (1983) (confirming requirement for neutral magistrate); Aguilar v. Texas, 378 U.S. 108, 111 (1964) (requiring magistrates to make disinterested determination of probable cause when issuing search warrants).

41. *See Gates*, 462 U.S. at 230-31 (clarifying probable cause determination as totality of circumstances test); Spinelli v. United States, 393 U.S. 410, 418-19 (1969) (affirming conclusory allegations not valid basis for probable cause); *Aguilar*, 378 U.S. at 112-13 (requiring search warrant to allege facts, not mere conclusions, to establish probable cause); Carroll v. United States, 267 U.S. 132, 161-63 (1925) (defining probable cause). The Court in *Carroll* held that officers must present sufficient underlying facts and circumstances such that a

search and seizure that does not meet the search warrant requirements will be deemed unconstitutional, and the evidence obtained will be inadmissible in the prosecution's case.[42]

3. Massachusetts Search and Seizure Law

a. The Probable Cause Standard in Massachusetts

Massachusetts search and seizure law, as set forth in Article Fourteen of the Massachusetts Declaration of Rights, provides greater Fourth Amendment protection than the United States Constitution.[43] The Massachusetts State Constitution preceded the United States Constitution, which based several of its provisions, including the Fourth Amendment, on the Massachusetts Declaration of Rights.[44] In Massachusetts, the standard for establishing probable cause for a search warrant is not as flexible and fluid as the federal standard.[45] The federal standard for proving probable cause, referred to as the *Gates* test, is a "totality of the circumstances" test.[46] In contrast, the Massachusetts standard for showing probable cause—referred to as the *Aguilar-Spinelli* test—is a two-prong test that requires a showing of a basis of knowledge for the underlying facts and proof that the information is credible and reliable.[47]

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reasonable person would conclude seizable evidence would be found on the premises or person to be searched. *Id.* at 162.

42. *See* Mapp v. Ohio, 367 U.S. 643, 655 (1961) (applying exclusionary rule to both state and federal criminal cases). The Court in *Mapp* stated that items obtained as a result of an unconstitutional search and seizure are inadmissible as evidence against a criminal defendant. *Id.* The Court reasoned that "[t]o hold otherwise is to grant the right but in reality to withhold its privilege and enjoyment." *Id.* at 656.

43. *See* MASS. CONST. pt. 1, art. XIV (guaranteeing right to freedom from unreasonable searches and seizures). Article Fourteen states:

> Every subject has a right to be secure from all unreasonable searches, and seizures, of his person, his houses, his papers, and all his possessions. All warrants, therefore, are contrary to this right, if the cause or foundation of them be not previously supported by oath or affirmation; and if the order in the warrant to a civil officer, to make search in suspected places, or to arrest one or more suspected persons, or to seize their property, be not accompanied with a special designation of the persons or objects of search, arrest, or seizure; and no warrant ought to be issued but in cases, and with the formalities prescribed by the laws.

Id.; *see also* Commonwealth v. Upton, 476 N.E.2d 548, 555 (Mass. 1985) (holding Massachusetts Declaration of Rights provides more substantive protection to criminal defendants than Fourth Amendment).

44. *See Upton*, 476 N.E.2d at 555 (pointing to Massachusetts Declaration of Rights as model for United States Constitution).

45. *See id.* at 556 (rejecting *Gates* test and upholding *Aguilar-Spinelli* test for probable cause). The court in *Upton* rejected the "totality of the circumstances" test, as the Supreme Court ruled in *Gates*, and criticized the *Gates* test because it is flexible and "'unacceptably shapeless and permissive.' The Federal test lacks the precision that we believe can and should be articulated in stating a test for determining probable cause." *Id.* (internal citations omitted).

46. *See* Illinois v. Gates, 462 U.S. 213, 252 (1983) (stating probable cause determined by totality of circumstances test).

47. *See Upton*, 476 N.E.2d at 557 (describing application of *Aguilar-Spinelli* test in probable cause

b. The Expectation of Privacy in Massachusetts

Despite the different state and federal standards for determining probable cause, the Massachusetts standard for recognizing an expectation of privacy is the same as the federal standard, which requires that an individual have a subjective expectation of privacy and that his expectation of privacy be one that society is willing to recognize as objectively reasonable.[48] In regard to the subjective component, the Supreme Judicial Court of Massachusetts has ruled that there is no subjective expectation of privacy in abandoned property, such as discarded cigarette butts and a water bottle in a police interview room, because the individual did not show a subjective expectation of privacy by not attempting to take the items with him at the end of the interview.[49] The most debatable aspect of the expectation of privacy is determining exactly what circumstances give rise to an objective expectation of privacy that society is prepared to recognize.[50] Massachusetts case law suggests several factors to be considered, such as the type of location, the level of the defendant's ownership in the location, the precautions, or lack thereof, taken to protect privacy, and the nature of the intrusion.[51] Despite the varying and sometimes confusing case law regarding where a person has an objective expectation of privacy, the United States Constitution and state case law are very clear that the home, unequivocally, has a reasonable expectation of privacy and is protected from unreasonable searches and seizures.[52]

c. DNA Treatment Under Massachusetts Law

Massachusetts law compels any person convicted of a felony to submit a DNA sample, which becomes part of a state DNA database.[53] The primary

determination). The court in *Upton* emphasized that each prong of the *Aguilar-Spinelli* test (the basis of knowledge and the veracity of the informant) are equally important and both elements must be satisfied. *Id.*

48. *See* Commonwealth v. Montanez, 571 N.E.2d 1372, 1380 (Mass. 1991) (stating expectation of privacy measured by examining subjective and objective components). The court in *Montanez* stated that "[t]he measure of the defendant's expectation of privacy is (1) whether the defendant has manifested a subjective expectation of privacy in the object of the search, and (2) whether society is willing to recognize that expectation as reasonable." *Id.*

49. *See* Commonwealth v. Bly, 862 N.E.2d 341, 356-57 (Mass. 2007) (elaborating on subjective component for recognizing expectation of privacy). The court in *Bly* focused on the defendant's action and whether he manifested a subjective expectation of privacy in the items seized. *Id.*

50. *See Montanez*, 571 N.E.2d at 1380 (identifying objective component in measuring reasonable expectation of privacy).

51. *See* Commonwealth v. Pina, 549 N.E.2d 106, 110 (Mass. 1990) (listing several factors useful in determining whether objective expectation of privacy exists).

52. *See* U.S. CONST. amend. IV (listing "houses" as protected areas); *see also* Commonwealth v. Porter P., 923 N.E.2d 36, 44 (Mass. 2010) (stating United States Constitution expressly grants reasonable expectation of privacy to person's home).

53. *See* MASS. GEN. LAWS ANN. ch. 22E, § 3 (2012) (requiring DNA submission for felons). Any person convicted of a felony must submit a DNA sample to the Department of State Police within one year of conviction, to be recorded in the state DNA database. *Id.* The submission of DNA is not stayed pending

purpose of the DNA database is to help law enforcement identify criminals in order to solve future cases.[54] Although the extraction of DNA is considered a search under the Fourth Amendment and Article Fourteen, the Supreme Judicial Court of Massachusetts ruled the extraction of DNA from a convicted felon is reasonable because felons have a diminished expectation of privacy, and the state has a strong interest in improving methods to identify criminals.[55]

In addition to convicted felons, Massachusetts law allows law enforcement officials to compel a DNA blood sample from an individual, but the required evidentiary standard to do so varies depending on the stage of the investigation.[56] For a person not convicted of a felony, and not yet indicted, a judge can issue a warrant to extract that individual's DNA if there is probable cause to believe that he committed a crime and his blood will aid in solving the crime.[57] The evidentiary standard in the postindictment stage of a criminal case requires a warrant to obtain a blood sample upon the Commonwealth's showing that the defendant's DNA will probably produce evidence relevant to his guilt.[58]

In contrast to the pre- and post-indictment evidentiary standards, the standard for a grand jury to compel a criminal defendant to submit a DNA sample is much easier to meet.[59] The grand jury must have a reasonable basis

appeal or motion for a new trial. *Id.*

54. *See* Markett, *supra* note 11, at 189-90 (explaining general purpose of DNA databank). Forensics identify specific characteristics in a DNA sample, which are referred to as a DNA profile. *Id.* at 189. The DNA profiles are then stored in a computer database accessible by law enforcement agencies. *Id.*

55. *See* U.S. CONST. amend. IV (outlining framework for protection from unreasonable searches and seizures for all citizens); MASS. CONST. pt. 1, art. XIV (granting Massachusetts citizens freedom from unlawful searches and seizures); *see also* Landry v. Att'y Gen., 709 N.E.2d 1085, 1090 (Mass. 1999) (stating DNA extraction constitutes Fourth Amendment search and seizure). The court in *Landry* held that although DNA extraction is a Fourth Amendment search and seizure, it is reasonable because convicted felons have a high rate of recidivism, and the government has a strong interest in identifying convicts for future criminal investigations. *Id.* at 1090-91; *see also* Jones v. Murray, 962 F.2d 302, 306 (4th Cir. 1992) (holding convicted felons have diminished expectation of privacy). Convicted felons have a diminished expectation of privacy because probable cause has already been established when a convict is brought into the criminal justice system, thus reducing the expectation of privacy. *Jones*, 962 F.2d at 306.

56. *See In re* Lavigne, 641 N.E.2d 1328, 1331 (Mass. 1994) (stating preindictment standard for request of DNA sample); *see also In re* Grand Jury Investigation, 692 N.E.2d 56, 60 (Mass. 1998) (stating standard for grand jury request of DNA sample); Commonwealth v. Trigones, 492 N.E.2d 1146, 1151 (Mass. 1986) (stating postindictment standard for request of DNA sample).

57. *See In re Lavigne*, 641 N.E.2d at 1331 (explaining factors weighed to establish probable cause to extract DNA from criminal suspect). This test balances: "the seriousness of the crime, the importance of the evidence to the investigation and the unavailability of less intrusive means of obtaining it, on the one hand, against concern for the suspect's constitutional right to be free from bodily intrusion on the other." *Id.*

58. *See Trigones*, 492 N.E.2d at 1151 (applying postindictment standard for extracting DNA sample); *see also* Commonwealth v. Maxwell, 808 N.E.2d 806, 811 (Mass. 2004) (providing standard for extracting DNA sample after issuance of criminal complaint). The standard for extracting DNA is the same either postindictment or after a criminal complaint has been issued. *Id.*

59. *See In re Grand Jury Investigation*, 692 N.E.2d at 59-60 (explaining grand jury DNA request requires lower probability level than pre- or postindictment). A grand jury does not have to demonstrate the same level of probable cause required for an arrest because probable cause already existed in order to indict the criminal

for believing that the defendant's DNA will significantly aid in their investigation.[60] The grand jury's request must be reasonable in light of the circumstances, which is a lower standard than the *Aguilar-Spinelli* test.[61] In addition to these approaches to obtaining an individual's DNA, the most common and simplest method used by law enforcement is obtaining an individual's discarded property without his consent and testing it for DNA.[62] Currently, Massachusetts does not have a statute making it unlawful to obtain a person's DNA without his consent, but that could change very soon.[63]

B. Theories for Protecting DNA

In response to the increased use of DNA in criminal procedure, legal scholars and legislators propose protecting an individual's genetic information by granting an individual property rights in his DNA.[64] Proponents of this

defendant in the first place. *Id.*

60. *See id.* at 60 (defining standard for production of DNA sample by grand jury).

61. *See supra* note 47 and accompanying text (outlining elements of two-prong *Aguilar-Spinelli* test); *see also* Commonwealth v. Williams, 790 N.E.2d 662, 668 (Mass. 2003) (comparing *Aguilar-Spinelli* standard to grand jury standard for DNA extraction).

62. *See* Paul M. Monteleoni, Note, *DNA Databases, Universality, and the Fourth Amendment*, 82 N.Y.U. L. REV. 247, 255-56 (describing ease of collecting DNA samples). People constantly shed DNA in the form of skin cells, hair clippings, and bodily oils, which are becoming increasingly easy for police to collect. *Id.*; *see also* Commonwealth v. Cabral, 866 N.E.2d 429, 433 (Mass. App. Ct. 2007) (holding no privacy interest in abandoned bodily fluids). Police are free to collect abandoned DNA samples. *See Cabral*, 866 N.E.2d at 433; *see also* Joh, *supra* note 12, at 864 (describing use of abandoned DNA by police as investigative technique). Police can evade criminal procedure rules that normally apply to searches and seizures by gathering a suspect's abandoned DNA. *See* Joh, *supra* note 12, at 864. Joh defines abandoned DNA as "any amount of human tissue capable of DNA analysis and separated from a targeted individual's person inadvertently or involuntarily, but not by police coercion." *Id.* at 859.

63. *See* An Act to Create a Genetic Bill of Rights, S. 1080, 187th Gen. Ct. (Mass. 2011) (proposing bill in Massachusetts granting DNA property and privacy rights).

64. *See* Suter, *supra* note 10, at 744, 746 (criticizing recent approach to protecting genetic information by granting DNA property rights). Suter examines the nature and value of genetic information in determining whether property law offers effective protection for DNA. *Id.* at 753-54. As science advances, the amount of information revealed by an individual's DNA increases. *Id.* at 738-39. Genetic information obtained from DNA reveals information about an individual's family history, predisposition to diseases, temperament, physical appearance, and capacities. *Id.*; *see also* Joh, *supra* note 12, at 882 (arguing for greater Fourth Amendment protection of abandoned DNA). Joh suggests that if DNA is viewed as property then courts will be more inclined to grant DNA Fourth Amendment protection. *See* Joh, *supra* note 12, at 867-68. Several state legislatures have enacted legislation that refers to an individual's DNA as his exclusive property. *Id.* at 868; *see also* COLO. REV. STAT. ANN. § 10-3-1104.7(1)(a) (2012) (describing genetic information as "unique property" of individual); FLA. STAT. ANN. § 760.40(2)(a) (2012) (referring to genetic information as "exclusive property" of person tested); GA. CODE ANN. § 33-54-1(1) (2012) (describing genetic information as "unique property" of individual tested); LA. REV. STAT. ANN. § 22:1023(E) (2012) (referring to genetic information as "property" of person tested); Amy Foster, Notes & Comments, *Critical Dilemmas in Genetic Testing: Why Regulations to Protect the Confidentiality of Genetic Information Should Be Expanded*, 62 BAYLOR L. REV. 537, 554 (2010) (arguing for more comprehensive legislation to protect confidentiality of genetic information). Several federal regulations have been enacted to protect the confidentiality of an individual's genetic information. *See* Foster, *supra*, at 538. Current federal legislation, such as the Health Insurance Portability and Accountability Act (HIPAA) and the Genetic Information Nondiscrimination Act of 2008 (GINA), are

theory often recommend two different property regimes for treating DNA as property: intangible property or intellectual property.[65] Despite the push to create property rights in DNA, other legal scholars contend that privacy rights would actually protect DNA better than property rights.[66] Property rights and privacy rights offer fundamentally different protections.[67] In deciding whether to use property law or privacy law to protect DNA, legislators should carefully consider the advantages and shortcomings of each approach.[68]

1. Granting DNA Property Rights—Is DNA Property?

Granting DNA property rights is a highly desirable approach to protecting DNA, because the right to own property is a fundamental right expressed in both the Fifth and Fourteenth Amendments of the United States Constitution.[69] John Locke described the crucial role of property rights in modern civilization as the reason why men enter into society—so that they can preserve their property.[70] As ownership is an important concept in American society, property rights in the United States are protected by some of the most robust laws.[71]

The legal definition of property does not describe property in terms of a

ineffective in protecting the confidentiality of genetic information because they have numerous exceptions and restrictions. *Id.*

65. *See* Jeffrey Lawrence Weeden, Note, *Genetic Liberty, Genetic Property: Protecting Genetic Information*, 4 AVE MARIA L. REV. 611, 637, 643-44 (2006) (outlining different categories of property law that could incorporate DNA). Weeden suggests that genetic information is best protected under intangible property regimes, such as intellectual property. *Id.*

66. *See* Suter, *supra* note 10, at 746 (explaining differences between property and privacy protections). Suter explains that property refers to "control within the marketplace," whereas privacy refers to "control over access to the self." *Id.*

67. *See id.*

68. *See* Weeden, *supra* note 65, at 655 (examining effectiveness of alternative protection regimes for genetic information). Weeden opines that genetic information is best protected as personal property but recognizes that American courts have been reluctant to recognize property rights in the intangible. *Id.*; *see also* Radhika Rao, *Property, Privacy, and the Human Body*, 80 B.U. L. REV. 359, 444 (2000) (comparing applicability of property and privacy theories to protect human body). Rao explains that under a property theory, the human body is treated as an object, separable from the person. *See* Rao, *supra*, at 444-55. In contrast, privacy offers a sense of indivisible personal autonomy over the body. *Id.*

69. *See* U.S. CONST. amend. V; *see also* U.S. CONST. amend. XIV (prohibiting governments from depriving persons of life, liberty, or property without due process); Rao, *supra* note 68, at 368 (identifying constitutional protections of property).

70. *See* JOHN LOCKE, SECOND TREATISE OF GOVERNMENT 65-66 (C.B. MacPherson ed., 1980) (analyzing purpose of government and basis of property rights). Locke suggested that a legitimate government is formed when individuals offer their allegiance to the government in exchange for property rights. *Id.*; *see also* Rao, *supra* note 68, at 367-68 (considering origins of treating body as property). Rao questions whether Locke truly considered individuals as the complete owners of their bodies. *See* Rao, *supra* note 68, at 367-68. Instead, Rao maintains that Locke viewed individuals as stewards of their bodies and God as the true owner of the body. *Id.*

71. *See* Suter, *supra* note 10, at 750-51 (discussing reasons why property law appears compelling method for protecting genetic information). The concept of property is so embedded in American society because people are accustomed to referring to things as "yours" and "mine," and because we have the ability to restrict others from using and accessing what is "ours." *Id.* at 751.

physical object but rather as a combination of rights, often referred to as a bundle of sticks, with each stick representing a substantive right, such as the rights to possess, to use, and to alienate.[72] Ownership is established when an individual has one or more of these substantive rights.[73] The bundle of sticks analysis is a paradigm used to determine whether particular things could effectively be treated as property.[74]

Wesley Newcomb Hohfeld elaborated on the definition of property by defining these substantive rights in terms of legal relations between parties.[75] Hohfeld describes four distinct legal relations: rights, privileges, powers, and immunities.[76] Each of these legal relations has both correlative and opposite features.[77] The correlative aspect of a legal relation describes the legal position of the owner of property at one end of the stick, and everyone else who is not the owner at the other end of the stick.[78] For example, a legal right created in

72. *See* Wesley Newcomb Hohfeld, *Fundamental Legal Conceptions as Applied in Judicial Reasoning*, 26 YALE L.J. 710, 742-43, 746-47 (1917) (analyzing nature of legal ownership); *see also* Hanoch Dagan, *The Craft of Property*, 91 CALIF. L. REV. 1517, 1519 (2003) (summarizing property theory as bundle of sticks); 63C AM. JUR. 2D *Property* § 1 (2012) (defining property as including right to possess, use, and dispose of object) [hereinafter *Property*].

73. *See Property*, *supra* note 72, § 1 (characterizing ownership in property as collection of rights).

74. *See* Catherine M. Valerio Barrad, *Genetic Information and Property Theory*, 87 NW. U. L. REV. 1037, 1048-49 (1993) (listing different interests in property used to determine whether ownership in property exists). Property rights assert a right to possess, control, enjoy, transfer, alienate, and devise. *Id.*; *see also* J.E. Penner, *The "Bundle of Rights" Picture of Property*, 43 UCLA L. REV. 711, 712 (1996) (explaining Anglo-American legal philosophy of property). Penner offers the example of the legal relationship between an individual and his car. *See* Penner, *supra*. Ownership does not arise from the relationship between the individual and his car; it is rather a myriad of personal rights that the owner holds against others that prevent them from stealing or damaging the car. *Id.*

75. *See* Hohfeld, *supra* note 72, at 742-43, 746-47 (analyzing nature of property ownership). Hohfeld opposes the traditional idea of property law that focuses on a single right. *Id.* at 742. Instead, Hohfeld asserts a paradigm that recognizes that ownership in property consists of several separate and distinct rights. *Id.*; *see also* Valerio Barrad, *supra* note 74, at 1048-49 (describing characteristics of ownership in property).

76. *See* Hohfeld, *supra* note 72, at 746-47 (explaining multiple legal interests in property); Valerio Barrad, *supra* note 74, at 1057-58 (describing "Hohfeldian framework" creating legal interest in property); *infra* note 82 and accompanying text (defining interest and ownership); *see also* RESTATEMENT (FIRST) OF PROP. §§ 1-5 (1936) (defining right, privilege, power, immunity, and interest as terms relating to ownership in property). "Right" is defined as "a legally enforceable claim of one person against another, that the other shall do a given act or shall not do a given act." RESTATEMENT (FIRST) OF PROP. § 1 (1936). "Privilege" is defined as "a legal freedom on the part of one person as against another to do a given act or a legal freedom not to do a given act." *Id.* § 2. "Power" is defined as "an ability on the part of a person to produce a change in a given legal relation by doing or not doing a given act." *Id.* § 3. "Immunity" is defined as "a freedom on the part of one person against having a given legal relation altered by a given act or omission to act on the part of another person." *Id.* § 4.

77. *See* Hohfeld, *supra* note 72, at 717-21 (elaborating on theory of property as legal relations); *see also* Valerio Barrad, *supra* note 74, at 1055-58 (noting Hohfeld's correlatives and opposites analysis as foundation of American property law).

78. *See* Hohfeld, *supra* note 72, at 718-20 (offering examples of correlative rights and duties); *see also* Wesley Newcomb Hohfeld, *Some Fundamental Legal Conceptions as Applied in Judicial Reasoning*, 23 YALE L.J. 16, 30 (1913) [hereinafter Hohfeld, *Some Fundamentals*] (describing application of correlative rights and duties). Hohfeld explains correlative rights with the following example: "[I]f X has a right against Y that he shall stay off the former's land, the correlative (and equivalent) is that Y is under a duty toward X to stay off

one person—meaning he has an affirmative claim against another—creates a correlative duty in the other person to respect that right.[79]

Unlike the correlative aspect of legal relations that coexist, Hohfeld describes the opposite feature of legal relations in property as rights that cannot possibly coexist.[80] For example, when an individual has legal immunity, meaning that he is exempt from liability, he cannot also be liable for that same legal relation.[81] Thus, under the Hohfeldian paradigm of legal relations, ownership arises when an individual can establish that he has the correlative and opposite legal relationships with regard to any combination of the sticks.[82]

Even though DNA is capable of being treated as property according to the Hohfeldian analysis, "[t]he law shies away from according protection to vagueness."[83] Most people, even scientists, still have only a vague understanding of the significance and function of DNA, leaving much to be discovered.[84] However, as science progresses, the law regarding the perception of property also evolves.[85] In *International News Service v. Associated Press*,[86] the United States Supreme Court considered whether news should be treated as

the place." *See* Hohfeld, *Some Fundamentals*, *supra*, at 32; *see also* Valerio Barrad, *supra* note 74, at 1055-56 (outlining Hohfeld's theory of correlative duties and rights).

79. *See* Hohfeld, *supra* note 72, at 718-19 (offering examples of correlative duties and rights in property); *see also* Valerio Barrad, *supra* note 74, at 1055-57 (explaining correlatives in legal relationship between owner of property and everyone else).

80. *See* Hohfeld, *supra* note 72, at 718-20 (introducing opposite feature of legal relations in property). Hohfeld uses the term "*negative* multital rights" in referring to the opposites feature of legal relations in property. *Id.* at 720; *see also* Valerio Barrad, *supra* note 74, at 1057 (contrasting Hohfeld's correlative aspect of property ownership with opposite feature). "[A] privilege may not coexist with a duty, a power may not coexist with a disability, and an immunity may not coexist with a liability." Barrad, *supra* note 74, at 1057.

81. *See* Hohfeld, *supra* note 72, at 718-20 (offering example of opposite feature of legal relations in property); *see also* Valerio Barrad, *supra* note 74, at 1057 (clarifying difference between opposites and correlatives in legal relations in property).

82. *See* RESTATEMENT (FIRST) OF PROP. §§ 5, 10 (1936) (defining terms "interest" and "owner" in property). The Restatement defines "interest" as "varying aggregates of rights, privileges, powers and immunities and distributively [means] any one of them." *Id.* § 5. The Restatement defines "owner" as meaning "the person who has one or more interests." *Id.* § 10; *see also* Valerio Barrad, *supra* note 74, at 1057-58 (defining legal interest in property under Hohfeldian framework).

83. *See* Hamilton Nat'l Bank v. Belt, 210 F.2d 706, 708 (D.C. Cir. 1953) (considering property protection over nonconcrete ideas). In *Hamilton National Bank*, Lloyd Belt sued Hamilton National Bank for appropriating his idea for a radio show. *Id.* at 707. Ultimately, the court held that the idea for the radio show was concrete enough to be afforded property rights because the plaintiff had a detailed plan. *Id.* at 709.

84. *See* Suter, *supra* note 10, at 738-39 (observing science of DNA still in "infancy"). "[E]very day we learn more about the important role genetics plays in shaping who we are and who we will become." *Id.* at 739.

85. *See* Int'l News Serv. v. Associated Press, 248 U.S. 215, 238-39 (1918) (observing advancements in technology call for reconsideration of what constitutes property). In *International News Service*, the defendant sued the plaintiff for pirating the Associated Press's news before it went to press, by gathering the news via telephone and telegraph, and publishing the news in the defendant's own newspaper. *Id.* at 231-32. The Court commented that the telephone and telegraph facilitated the spread of information, thus allowing easier access to information and making it easier to pirate copyright-entitled information. *Id.* at 237-38.

86. 248 U.S. 215 (1918).

property.[87] The Court ruled the news has attributes of property, such as the ability to be bought and sold, and should therefore be treated as property.[88]

International News Service represents an enduring question in property law—whether something intangible, such as information in the news, can have property rights.[89] Justice Brandeis disagreed with the majority's treatment of news as property because news is information and is not "property in the strict sense."[90] Intangible property law and intellectual property law are examples of developing property theories that are frequently used to recognize property rights in objects that are not traditionally considered property in the "strict sense."[91]

a. Intangible Property

The most challenging barrier to treating DNA as property is the fact that it is imperceptible to the naked eye.[92] Nevertheless, recognition of property rights in the intangible can be traced back to James Madison, who wrote that "[i]n a word, as a man is said to have a right to his property, he may be equally said to have a property in his rights."[93] Madison emphasized that an individual's rights and liberties have value, and where there is value, there is property.[94]

87. *See id.* at 232 (stating issue before Court). The Court recognized that news has an abstract component that consists of substantive information, as well as a physical component that consists of the actual compilation of words. *Id.* at 242-43.

88. *See id.* at 240 (holding news information has attributes of property). The Court differentiated between treating news as property belonging to the public as opposed to competing news services vying for ownership. *Id.* at 240-41.

89. *See* Penner, *supra* note 74, at 715-16 (discussing courts' struggle to determine whether intangibles can have property rights).

90. *See Int'l News Serv.*, 248 U.S. at 255 (Brandeis, J., dissenting) (arguing against majority opinion of news as property).

91. *See* Weeden, *supra* note 65, at 637 (outlining possible categories of property applicable to genetic information). Intangible property is defined as "property that lacks a physical existence." *See* BLACK'S LAW DICTIONARY 1336 (9th ed. 2009). Intellectual property regimes relevant to genetic information include copyrights, patents, and trade secrets. *See* Weeden, *supra* note 65, at 645-46. A copyright is "a property right in an original work of authorship . . . fixed in any tangible medium of expression, giving the holder the exclusive right to reproduce, adapt, distribute, perform, and display the work." *See* BLACK'S LAW DICTIONARY 386 (9th ed. 2009). A patent is "the governmental grant of a right, privilege, or authority." *Id.* at 1234. A trade secret is "a formula, process, device, or other business information that is kept confidential to maintain an advantage over competitors." *Id.* at 1633.

92. *See* Weeden, *supra* note 65, at 638 (commenting on society's bias toward tangible property). Weeden opines that genetic information cannot be properly protected by property law unless the societal bias for tangible property is overcome. *Id. But see* Hohfeld, *Some Fundamentals*, *supra* note 78, at 21 (asserting all property has intangible characteristics). Hohfeld explains that there is a "fallacious" differentiation between tangible and intangible property. *Id.* at 21-22. Although the term "property" is commonly used to refer to a physical object, property is more accurately a reference to the intangible rights attached to an object (e.g., the rights to possess, use, enjoy, and alienate an object). *Id.*

93. *See* James Madison, *Property*, *in* 16 THE FOUNDERS' CONSTITUTION 23 (Phillip B. Kurland & Ralph Lerner eds., 1987), *available at* http://press-pubs.uchicago.edu/founders/documents/v1ch16s23.html.

94. *See id.* (describing individual's property interests in liberties). Specifically, Madison asserts that an individual has property rights in his free speech. *Id.*

Despite Madison's perception of rights as property, the American cultural perception of property tends to focus on objects that are physical and identifiable.[95]

Gradually, courts have broadened the scope of property to include the intangible.[96] The Oregon Supreme Court demonstrated that the law must adapt to advancing science when the court recognized that a "thing," in terms of trespass law, can include gases and microscopic particles.[97] State courts have also recognized that the term "property" includes more than just physical objects, but also extends to intangible entities such as rights and interests similar to Hohfeld's and Madison's concepts of property.[98]

b. Intellectual Property

In addition to treating DNA as intangible property, intellectual property is another proposed property regime that could potentially protect DNA.[99] Intellectual property does not protect ideas themselves, but rather protects the expression of ideas.[100] An expression of an idea is protectable under intellectual property law if it contains at least a minimum level of creativity.[101] The traditional intellectual property regimes include patents, copyrights, trademarks, and trade secrets.[102] The most appealing and appropriate intellectual property approach to protecting DNA is to treat it as a trade secret.[103] When determining whether a trade secret exists, courts consider

95. *See* Weeden, *supra* note 65, at 638 (discussing American bias toward property rights in tangibles).

96. *See* Martin v. Reynolds Metals Co., 342 P.2d 790, 794 (Or. 1959) (holding invisible particles capable of constituting action for trespass).

97. *See id.* at 793 (reasoning law should catch up to science in recognizing molecules and particles). Prior to *Martin*, trespass was only considered actionable if a person caused a physical thing to enter onto another's property. *See* RESTATEMENT (FIRST) OF TORTS § 158 cmt. h (1934).

98. *See* Fidelity & Deposit Co. of Md. v. Arenz, 290 U.S. 66, 69 (1933) (holding property includes obligation to pay debt); *see also* Solomon v. Solomon, 857 A.2d 1109, 1125 (Md. 2004) (upholding division of marital property may include intangible property); Bouse v. Hutzler, 26 A.2d 767, 769 (Md. 1942) (holding value of property bequeathed includes intangible property for taxation purposes).

99. *See* Weeden, *supra* note 65, at 643 (analyzing applicability of intellectual property to protection of genetic information).

100. *See* Baker v. Selden, 101 U.S. 99, 104-07 (1879) (holding copyright in book does not extend to idea, only expression of idea).

101. *See* Feist Publ'ns, Inc. v. Rural Tel. Serv. Co., 499 U.S. 340, 348 (1991) (upholding requirement of minimum creativity for work to qualify for copyright protection).

102. *See* Weeden, *supra* note 65, at 645-46 (listing traditional intellectual property regimes).

103. *See Genomics Policy Researchers Suggest Trade-Secret Model for Biobanks*, GENOMEWEB DAILY NEWS (Apr. 15, 2011), http://www.genomeweb.com/sequencing/genomics-policy-researchers-suggest-trade-secret-model-biobanks (identifying trade secret as secure framework for protecting DNA); *see also* UNIFORM TRADE SECRETS ACT § 1(4)(i)-(ii) (2011) (defining trade secret). The Uniform Trade Secrets Act defines a "Trade Secret" as:

> [I]nformation, including a formula, pattern, compilation, program device, method, technique, or process, that: (i) derives independent economic value, actual or potential, from not being generally known to, and not being readily ascertainable by proper means by, other persons who can obtain

whether the information is secret and whether it has competitive value.[104] The Fifth Circuit examined these factors in *E.I. duPont deNemours & Co. v. Christopher*.[105] Similar to how a trade secret has monetary value, the case of *Moore v. Regents of the University of California*[106] demonstrates the high value of genetic information.[107] The California Supreme Court in *Moore* ruled that a patient does not have a property right in his removed tissue because the genetic information contained in human tissue is too valuable to restrict access.[108]

2. Granting DNA Privacy Rights

The potential lucrative value of genetic information is the reason why many legal scholars are opposed to granting DNA property rights—because property law would treat genetic information as a commodity, which could have dangerous consequences.[109] The detrimental effects of treating genetic information as a commodity are best described in the case of *Greenberg v.*

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economic value from its disclosure or use, and (ii) is the subject of efforts that are reasonable under the circumstances to maintain its secrecy.

Id.; *see also* RESTATEMENT (FIRST) OF TORTS § 757 (1939) (setting forth elements of trade secret misappropriation).

104. *See* UNIFORM TRADE SECRETS ACT § 1(4)(i)-(ii) (outlining elements of trade secret).

105. 431 F.2d 1012, 1016-17 (5th Cir. 1970) (considering whether trade secret exists in method of producing methanol). The court held that a competitor wrongfully obtained a methanol manufacturing plant's trade secrets when the competitor took pictures of the plant from an airplane. *Id.* at 1017. The Court ruled that the plant's method for manufacturing methanol was secret because it was not known to the public and, although visible from an airplane, the plant took reasonable precautions to ensure that the information remained a secret as it was in the process of constructing a roof. *Id.* at 1016. Also, the court implied that the plant's novel method for manufacturing methanol was valuable to its competitors, as evidenced by the fact that the competitors went to great lengths to acquire the secret. *Id.*

106. 793 P.2d 479 (Cal. 1990).

107. *See id.* at 489-93 (examining possible proprietary interest in individual's genetic material).

108. *See id.* at 488-93 (denying patient's property rights in own cells). In *Moore*, a doctor removed his patient's rare cells to eradicate cancer and then used these cells to patent a valuable cell line without the patient's knowledge or consent. *Id.* at 480-81. The court in *Moore* rejected the patient's property rights argument, reasoning that granting patients property rights in their removed tissue would impede scientific progress and would "destroy the economic incentive to conduct important medical research." *Id.* at 495-96. The court based its reasoning on policy considerations for encouraging scientific research, on a lack of legislation surrounding property rights in the human body, and on the basis that theories of fiduciary duties and informed consent are more appropriate for protecting the human body than a property theory. *Id.* at 490-93. Therefore, the problem in treating DNA as intellectual property is not whether the genetic information has value, but instead whether the genetic information is too valuable to deny access. *Id.* Although the court's decision in *Moore* was intended to bolster scientific research, it has in fact had the opposite effect because now scientists are encouraged to treat patients like a commodity. *See* Lisa C. Edwards, Note, *Tissue Tug-of-War: A Comparison of International and U.S. Perspectives on the Regulation of Human Tissue Banks*, 41 VAND. J. TRANSNAT'L L. 639, 652-53 (2008) (criticizing *Moore* decision for denying individuals property rights in genetic material).

109. *See* Sheldon Krimsky, *The Profit of Scientific Discovery and Its Normative Implications*, 75 CHI.-KENT L. REV. 15, 19 (1999) (emphasizing rapid potential for financial gains with access to DNA); *see also* Rao, *supra* note 68, at 443-45 (comparing and contrasting property and privacy theories for protecting DNA).

Miami Children's Hospital Research Institute,[110] where doctors patented the Canavan gene mutation, making testing less accessible and more expensive.[111] In light of the harmful consequences that treating DNA as property would have on an individual's well-being, privacy law appears to be a more appropriate theory for protecting DNA.[112]

Modern privacy law is said to be founded in Justices Warren and Brandeis's *The Right to Privacy*, where they set out to disentangle privacy from property.[113] Justices Warren and Brandeis describe the harm caused by an invasion of privacy as subjecting an individual to "mental pain and distress, far greater than could be inflicted by mere bodily injury."[114] *The Right to Privacy* paved the way for the Georgia Supreme Court to be the first court to recognize a right to privacy in 1905.[115] The Georgia Supreme Court recognized that the right of privacy is embraced within the absolute rights of personal security and personal liberty.[116] Thus, the scope of privacy protects some of an individual's most vital interests that cannot be captured by property law.[117]

The motivation behind the desire to protect DNA is not that an individual should own his genetic information, but instead, that an individual should be able to control access to his DNA.[118] Under property law, modern technology allows an individual to separate himself from his body as evidenced by the growing market for body parts.[119] On the other hand, privacy protects an individual holistically, extending beyond the scope of property law to

110. 264 F. Supp. 2d 1064 (S.D. Fla. 2003).

111. *See id.* at 1068 (noting unfortunate commercialization of genetic information). In *Greenberg*, parents of children with Canavan disease provided a doctor with DNA so that he could research the disease, identify a genetic mutation, and help the public at large. *Id.* at 1067. Once the doctor was able to isolate the Canavan gene mutation, he obtained a patent without the patients' consent or knowledge. *Id.* Consequently, access to Canavan testing became restricted to licensing agreements and royalty fees. *Id.*

112. *See* Suter, *supra* note 10, at 737 (advocating in favor of protecting genetic information under privacy law as opposed to property law).

113. *See* Samuel D. Warren & Louis D. Brandeis, *The Right to Privacy*, 4 HARV. L. REV. 193, 193 (1890) (redefining scope of property law protection). Political, social, and economic changes require the law to adapt to broadened concepts of property. *Id.* at 213-19.

114. *See id.* at 196 (considering need to protect right to privacy).

115. *See generally* Pavesich v. New Eng. Life Ins. Co., 50 S.E. 68 (Ga. 1905) (recognizing claim for invasion of privacy). The plaintiff in *Pavesich* brought an action against the defendant for publishing a likeness of the plaintiff in its advertisement. *Id.* at 68.

116. *See id.* at 69-71 (summarizing historical roots of right to privacy). The court in *Pavesich* reasoned that the right to privacy has deep roots in natural law, traceable back to the Roman's concept of justice. *Id.* at 69-70.

117. *See* Warren & Brandeis, *supra* note 113, at 213 (distinguishing property law protections from privacy law protections). The right to privacy extends protection to "personal appearance, sayings, acts, and to personal relations, domestic or otherwise." *Id.*

118. *See* Suter, *supra* note 10, at 767-69 (commenting on individual's interest in controlling access to genetic information). Control invokes more than property rights; it connotes power over self-determination. *Id.*

119. *See id.* at 757 (noting already existing market for body parts).

encompass an individual's identity and integrity.[120]

United States Supreme Court precedent further shows that privacy rights warrant greater Fourth Amendment protection than property rights because an individual's property is not protected unless the individual has a reasonable expectation of privacy.[121] In *Jones v. United States*,[122] the Court applied privacy law instead of property law in determining whether an individual has Fourth Amendment protection.[123] Thus, Fourth Amendment protection hinges on privacy rights, not property rights.[124]

The scope of privacy protection is also greater than property rights in terms of possible remedies available to claimants in court.[125] Privacy remedies are stronger than property law remedies because privacy allows damages to be

120. *See id.* at 762-63 (exposing dangers of commodification of genetic information). Privacy "protects the self against modern society's dehumanization and assault on the self." *Id.* at 762; *see also* Anita L. Allen, *Coercing Privacy*, 40 WM. & MARY L. REV. 723, 737-38 (1999) (discussing important values associated with right to privacy); Pamela Samuelson, *Privacy as Intellectual Property?*, 52 STAN. L. REV. 1125, 1136-39 (2000) (recognizing unintended consequences of granting personal information property rights). The transferability of property rights in personal information would pose a problem when an individual decides to sell his personal information to a company to use for a specific purpose, and then the company wants to sell it to a third party for a different purpose. *See* Samuelson, *supra*, at 1137-38.

121. *See* Orin S. Kerr, *The Fourth Amendment and New Technologies: Constitutional Myths and the Case for Caution*, 102 MICH. L. REV. 801, 838 (2004) (contending Fourth Amendment offers less protection than privacy law). "Most existing Fourth Amendment rules in new technologies are based heavily on property law concepts, and as a result offer only relatively modest privacy protection in new technologies." *Id.*

122. 362 U.S. 257 (1960).

123. *See id.* at 265-66 (granting defendant standing in motion to suppress although not property owner of premises searched). In *Jones*, the defendant was staying briefly at his friend's apartment as a guest. *See id.* at 259. During the defendant's stay, and while his friend was out of town, the police searched the apartment and seized drugs therefrom. *Id.* at 258-59. The district court in *Jones* denied the defendant's motion to suppress the drugs as evidence because the defendant was only a guest and did not have any property rights in the apartment. *Id.* at 259. The Supreme Court rejected the district court's reasoning that property law dictates whether or not a person deserves Fourth Amendment protection and held that regardless of an individual's property interest in the subject of a search and seizure, he may still have a legitimate privacy interest that affords him Fourth Amendment protection from the search and seizure. *Id.* at 267. The Court rejected distinctions in interest in property as determinative of whether an individual is afforded Fourth Amendment protection. *Id.* at 266; *see also* Kerr, *supra* note 121, at 818-19 (noting Supreme Court applied broader conception of property).

124. *See* Kerr, *supra* note 121, at 819 (explaining Fourth Amendment protection not based upon ownership interest in property subject to search). The Court in *Jones* used a broader concept of property that analyzed whether the defendant was rightfully on the property. *See id.* Because the defendant had permission to be on the property, his Fourth Amendment privacy expectation remained intact. *See id.*; *see also Jones*, 362 U.S. at 267 (stating Court's reasoning for granting Fourth Amendment protection).

125. *See* Suter, *supra* note 10, at 812 (comparing different remedies available for claims based in property law and privacy law). If DNA is protected by property law, then injured parties can only bring a cause of action for the market value of their stolen genetic information. *See id.* Under privacy law, an injured party would have several options depending on the circumstances of the DNA misuse. *See id.* Claimants could sue based on their privacy interests in controlling access to their genetic information. *See id.* A patient could additionally sue for breach of trust under circumstances where a doctor misuses and profits from the patient's DNA. *See id.* The dignitary harms arising from breach of trust are impossible to measure in terms of market value as required in property law. *See id.* In contrast, property law does not allow for a cause of action based on "dignitary and relational harms." *See id.* at 811-13.

measured subjectively, taking into account the personal and dignitary value of that information to the individual.[126] In contrast, property remedies are measured objectively according to the market value, which is rigidly evaluated.[127] Therefore, the flexibility and vastness of privacy law remedies could offer much greater compensation to injured parties than property law.[128]

C. Pending Legislation—Massachusetts Genetic Bill of Rights

On January 21, 2011, a Genetic Bill of Rights was introduced in the Massachusetts State Legislature.[129] The bill is co-sponsored by Massachusetts State Senator Harriette Chandler and Representative Ellen Story and has the support of at least fifteen other Massachusetts state legislators.[130] The principal intent behind the GBR is to create property and privacy rights in an individual's genetic information.[131] The GBR declares "genetic information [is] the exclusive property of the individual from whom the information is obtained."[132] The bill would grant Massachusetts residents significantly more rights in their genetic information than they have under existing legislation.[133]

126. *See* Randall R. Bovbjerg et al., *Valuing Life and Limb in Tort: Scheduling "Pain and Suffering*,*"* 83 NW. U. L. REV. 908, 912 (1989) (explaining very broad scope of noneconomic damages). The law does not offer precise guidelines for calculating noneconomic damages resulting from personal injury. *See id.* at 913-14.

127. *See id.* at 910 (asserting measurement of economic damages "relatively straightforward").

128. *See* Suter, *supra* note 10, at 812-13 (suggesting privacy law offers more adequate remedy for protecting genetic information). The adequacy of a remedy is an important consideration in determining which legal theory should protect genetic information because the possibility of harsh punishment serves as an effective deterrent. *See id.* The purpose of a remedy is to rectify the wrong done and make an injured party whole again. *See id.*

129. *See* An Act to Create a Genetic Bill of Rights, S. 1080, 187th Gen. Ct. (Mass. 2011).

130. *See id.*; *see also* Pete Shanks, *Massachusetts Considers Genetic Bill of Rights*, BIOPOLITICAL TIMES (Feb. 21, 2011), http://www.biopoliticaltimes.org/article.php?id=5599 (announcing introduction of GBR in Massachusetts State Legislature); *see also Bill Sponsors: MA Senate Bill 1080-187th General Court*, LEGISCAN, http://legiscan.com/gaits/sponsors/313947 (last visited July 18, 2012) (listing supporters of GBR-Massachusetts Senate Bill 1080). As of January 2012, Massachusetts state senators supporting the GBR are: Senators Cynthia Stone Creem, Harriette L. Chandler, Patricia D. Jehlen, and Sal DiDomenico. *See* LEGISCAN, *supra*. Massachusetts state representatives supporting the GBR are: Representatives Alice K. Wolf, Antonio F. D. Cabral, Benjamin Swan, Carl Sciortino, Carolyn Dykema, Cleon H. Turner, Denise Provost, Ellen Story, Franck Israel Smizik, Jay R. Kaufman, Kay Khan, Lori Ehrlich, and Theodore C. Speliotis. *Id.*

131. *See* Mass. S. 1080 (declaring purpose of bill). Section 1 of the GBR amends Section 70G of Chapter 111. *See* MASS. GEN. LAWS ANN. ch. 111, § 70G (2012) (regulating genetic information and reports); *see also An Act to Create a Genetic Bill of Rights: Hearing on S.B. 1080 Before the Joint Committee on Public Health*, 2011, Gen. Ct. 187th Sess. (Mass. 2011) [hereinafter *Hearing*] (providing statement of Ann K. Lambert, Legislative Counsel, ACLU Massachusetts); Susan Huber & Dan Vorhaus, *Genetic Bill of Rights Proposed in Massachusetts*, GENOMICS LAW REPORT (Feb. 14, 2011), http://www.genomicslawreport.com/index.php/2011/02/14/genetic-bill-of-rights-proposed-in-massachusetts/ (describing content of GBR). The GBR is prompted by the rapidly increasing storage and sharing of genetic information. *See Hearing*, *supra*. The GBR recognizes that control over how an individual's genetic information is stored and shared is a human right. *Id.*

132. *See* Mass. S. 1080 (proposing unprecedented property rights in individual's genetic information).

133. *See* Huber & Vorhaus, *supra* note 131 (comparing GBR to current federal and state legislation regarding genetic information). The GBR attempts to rectify the patchwork protection for genetic information provided by federal statutes, such as HIPAA and GINA, and the Massachusetts State Constitution. *See id.*; *see*

1. Current Laws Regarding Genetic Information

Existing law does not adequately criminalize DNA theft.[134] Criminalizing DNA theft is crucial, because unlike other personal information—like a stolen bank account number or credit card—once an individual's genetic information is exposed, there is almost nothing the individual can do to remedy the loss.[135] The crime of DNA theft should consist of three elements: The thief must knowingly take an individual's DNA, with the intent of analyzing it, and without the individual's consent.[136]

Massachusetts law only requires an individual's prior written consent to perform genetic testing.[137] Similar to the United States Constitution, the Constitution of the Commonwealth of Massachusetts does not expressly provide for a right to privacy.[138] Also, current state and federal law does not

also Shanks, *supra* note 130 (listing proposals set forth in GBR). In addition to granting property and privacy rights in genetic information, the GBR contains several other proposals to regulate and protect genetic information. *See* Shanks, *supra* note 130. The GBR prohibits health care facilities and wellness services from denying treatment solely based on an individual's genetic disorder. Mass. S. 1080. The GBR prohibits genetic information from being used in decisions regarding life, long-term, and disability insurance. *Id.* § 1(c). The GBR prohibits auto insurers from using genetic information in determining policies and rates. *Id.* § 4. The GBR also forbids banks from using genetic information for determining credit worthiness. *Id.* § 6.

134. *See* Elizabeth E. Joh, *DNA Theft: Recognizing the Crime of Nonconsensual Genetic Collection and Testing*, 91 B.U. L. REV. 665, 686 (2011) (advocating in favor of need for specific DNA theft criminal statutes). Joh describes United States' efforts to protect genetic information as "sporadic and non-comprehensive." *Id.* Most legislation has focused on genetic discrimination, not genetic theft. *Id.*; *see also Hearing*, *supra* note 131 (providing statement of Sheila Dector, Executive Director, Jewish Alliance for Law and Social Action). The GBR is a response to "piece-meal" proposals throughout the United States, attempting to protect genetic information. *See Hearing*, *supra* note 131. The GBR is precedential because it aims to regulate the "data trafficking" of genetic information. *Id.*

135. *See* Joh, *supra* note 134, at 681 (comparing genetic information with other types of private information). In contrast to credit cards and bank accounts, it is impossible for an individual to secure his genetic information with security devices like locks and passwords. *Id.*

136. *See id.* at 689 (defining distinct DNA theft offense). Inadvertent collection of an individual's DNA, without intent to analyze, should not be criminalized because it would lead to a flood of cases. *See id.* at 690. A person who takes an individual's hat should be guilty of larceny, but not DNA theft, unless he intends to analyze the individual's DNA in the hat. *Id.* at 690-91.

137. *See* MASS. GEN. LAWS ANN. ch. 111, § 70G (2012) (requiring prior written consent for genetic testing). The GBR would change current Massachusetts law, which only requires written consent, to require informed written consent to use an individual's genetic information. *See Hearings*, *supra* note 131 (providing statement of Senator Harriette L. Chandler). Written consent only controls the release of an individual's genetic information, while informed written consent would require that the individual be made aware of the specific purpose for which his genetic information will be used. *Id.*

138. *See* Op. of the Justices to the Senate, 376 N.E.2d 810, 818 (Mass. 1978) (advising Massachusetts Senate regarding constitutionality of proposed law). The Senate asked for the advice of the Supreme Judicial Court of Massachusetts on whether the proposed law was an unconstitutional invasion of privacy. *Id.* at 814. The Supreme Judicial Court compared the right to privacy under the Federal Constitution to the right to privacy under the state constitution. *Id.* at 818. Although the Federal Constitution does not expressly grant a right to privacy, the Supreme Court has ruled that a right to privacy can be implied in the Federal Constitution. *Id.* Similar to the Federal Constitution, a right to privacy is implied in the Constitution of the Commonwealth of Massachusetts under Article One, declaring that all men are born free and equal; Article Fourteen, the right to be free from unreasonable searches and seizures; and Article Sixteen, the right to free speech. *Id.* at 818-20.

affirmatively address whether or not an individual has a property or privacy interest in his genetic information.[139]

Massachusetts laws currently prohibit the use of genetic information in employment, selling bonds, insurance, granting mortgage loans, and housing.[140] Federal legislation, such as the Genetic Nondiscrimination Act (GINA) and the Health Insurance Portability and Accountability Act (HIPAA), are perceived to be inadequate and incomplete in the scope of their protection.[141] GINA prohibits employers and insurers from making decisions based upon an individual's genetic information.[142] GINA has, however, been harshly criticized for offering inadequate protections because of its several exceptions.[143] GINA's regulations do not extend to federal employers, state employers, and employers with fifteen or fewer employees.[144] GINA's coverage is further weakened by allowing employers to inadvertently obtain genetic information about their employees and not protecting employees from

139. *See* Jeremy Gruber, *GeneWatch: Massachusetts Legislature Holds Hearing on Genetic Bill of Rights*, COUNCIL FOR RESPONSIBLE GENETICS, http://www.councilforresponsiblegenetics.org/GeneWatch/GeneWatchPage.aspx?pageId=342 (last visited July 18, 2012) (comparing GBR to existing federal and state laws regulating genetic information). Despite the enactment of GINA in 2008, the United States still lacks "comprehensive" genetic privacy legislation. *Id.* Current laws do not prohibit the use of genetic information in making decisions regarding life insurance, disability insurance, long-term care insurance, mortgages, or commercial transactions. *Id.*; *see also* Gardner, *supra* note 7, at 52 (exposing lack of protection in state statutes for genetic information). Only twelve states in the nation have laws against nonconsensual collection of an individual's DNA. *See* Gardner, *supra* note 7, at 52. Despite these laws, there have been no prosecutions for violations of these statutes and only a "handful" of lawsuits. *Id.* Alaska has the most stringent laws, which outlaw collecting or retaining DNA, analysis of DNA, and disclosure of DNA test results without first acquiring the informed consent of the individual being tested. *Id. See generally* ALASKA STAT. ANN. § 18.13.010 (2012) (regulating genetic testing). The proposed GBR in Massachusetts would grant even broader protections and rights in genetic information than the Alaska statute, or any other existing state statute. *Id.*

140. *See* MASS. GEN. LAWS ANN. ch. 151B, § 4 (2012) (prohibiting discrimination based upon genetic information). The current Massachusetts civil rights statute prohibits discrimination based upon genetic information in employment, in selling bonds and insurance, in granting mortgage loans, and in housing. *Id.*

141. *See* Huber & Vorhaus, *supra* note 131 (noting limitations of GINA and HIPAA). GINA is especially weak because it does not prohibit using genetic information to make decisions regarding long-term care, life, and disability insurance. *Id.*; *see also* Genetic Information Nondiscrimination Act of 2008 (GINA), Pub. L. No. 110-233, 122 Stat. 881 (2008); Health Insurance Portability and Accountability Act (HIPAA), Pub. L. No. 104-191, 110 Stat. 1936 (1996).

142. *See* GINA, Pub. L. No. 110-233, 122 Stat. 881 (2008) (preventing discrimination based on genetic information).

143. *See* Joanne Barken, Note, *Does the Genetic Information Nondiscrimination Act of 2008 Offer Adequate Protection?*, 75 BROOK. L. REV. 545, 572-77 (2009) (analyzing GINA's weaknesses). GINA's protection is piecemeal because it contains several far-reaching exceptions. *Id.* at 576.

144. *See* GINA, Pub. L. No. 110-233, § 201(2)(B)(i), 122 Stat. 881 (2008) (defining employer by referencing 42 U.S.C. § 2000e(b)). Claimants cannot sue state employers in federal court for damages under GINA. *See* Erin Murphy Hillstrom, Comment, *May an Employer Require Employees to Wear "Genes" in the Workplace? An Exploration of Title II of the Genetic Information Nondiscrimination Act of 2008*, 26 J. MARSHALL J. COMPUTER & INFO. L. 501, 517 (2009) (noting GINA does not apply to employers with fewer than fifteen employees); *see also* Jessica L. Roberts, *Preempting Discrimination: Lessons From the Genetic Information Nondiscrimination Act*, 63 VAND. L. REV. 439, 485 (2010) (identifying enforcement problems in applying GINA to state employers).

discrimination based on manifested disorders.[145] Critics also argue that GINA is ineffective because its definition of genetic information is broad and creates an indefinite protected class.[146]

Similar to GINA, HIPAA is also criticized for its ineffectiveness because it does not provide a private cause of action or individual remedy.[147] If a medical provider violates HIPAA by unlawfully releasing a patient's medical records containing genetic information, the only remedy available is for the Department of Health and Human Services to issue a civil fine or turn the case over to the Department of Justice for criminal prosecution.[148] In response to the inadequate coverage of GINA and HIPAA, as well as the relatively easy ability to obtain an individual's DNA sample, Massachusetts legislators were prompted to propose a Genetic Bill of Rights to strengthen protection of genetic information in Massachusetts.[149]

2. Genetic Bill of Rights Would Grant Property and Privacy Rights in DNA

The GBR is unprecedented legislation because it would not only require consent for extracting an individual's DNA, but it would also expressly create property and privacy rights in DNA, which extend greater protection than any existing federal or state legislation.[150] The proposed bill states that an

145. *See* GINA, Pub. L. No. 110-233, § 202 (b)(1), 122 Stat. 881 (2008) (exempting employees who inadvertently disclose genetic disorder to employer); *see also id.* § 210 (defining genetic information with exception for inadvertent disclosure).

146. *See id.* § 201 (4)(A) (defining genetic information); *see also* Patricia Alten, Note, *GINA: A Genetic Information Nondiscrimination Solution in Search of a Problem*, 61 FLA. L. REV. 379, 379 (2009) (criticizing GINA for having broad definition of genetic information).

147. *See* Jack Brill, Note, *Giving HIPAA Enforcement Room to Grow: Why There Should Not (Yet) Be a Private Cause of Action*, 83 NOTRE DAME L. REV. 2105, 2116-17 (2008) (analyzing effectiveness of HIPAA due to lack of private cause of action).

148. *See id.* at 2117, 2126 (setting forth argument in favor of creating HIPAA private cause of action). Critics of HIPAA argue that it is ineffective to rely on a government agency to monitor enforcement, especially because government agencies are often tainted by political influence. *Id.* at 2129; *see also* HIPAA, Pub. L. No. 104-191, § 160.306, 110 Stat. 1936 (1996) (setting forth complaint procedure).

149. *See* Huber & Vorhaus, *supra* note 131 (indicating legislative intent behind GBR). The Massachusetts "GBR addresses perceived gaps and limitations in the coverage provided by major federal statutes . . . ." *Id.*; *see also* Gardner, *supra* note 7, at 52 (acknowledging legislative intent behind proposal of GBR in Massachusetts). DNA could be easily obtained from discarded cigarette butts, licked postage stamps, and used glasses of beer. Gardner, *supra* note 7, at 52. Collection of DNA "is a largely unchartered area, but we have to put up barriers to protect people from all these scary scenarios." *Id.* (quoting Massachusetts state Senator Harriette Chandler, cosponsor of GBR); *see also* Joh, *supra* note 134, at 673 (advocating in favor of need for specific DNA theft criminal statutes). Joh explains that now it is crucial to make DNA theft a criminal offense because of the availability of cheap technology for analyzing DNA. *See* Joh, *supra* note 134, at 673. "Recreational genomics" is affordable and as easy as purchasing a kit on the internet with a credit card, following the instructions to swab some cells, mailing it to the laboratory address given, and then receiving an email containing the genetic analysis. *Id.*

150. *See* Joh, *supra* note 134, at 686-87 (reviewing existing federal and state DNA laws). GINA only applies to employers and insurance and does not regulate the nonconsensual-collection analysis of DNA by private persons. *Id.* at 686. Although about ten states in the nation make disclosure and analysis of DNA a crime, no state, besides Alaska, criminalizes nonconsensual collection of DNA and no state makes DNA theft a

individual has absolute dominion and control over his genetic information, and violations would be governed by Massachusetts property law.[151] Unauthorized use of an individual's genetic information would be treated as an interference with his privacy and property rights.[152] In addition, the GBR allows for individuals to treat their genetic information like any other chattel or possession by storing it and bequeathing it to family members in their last will and testament.[153] The GBR recognizes that an individual's genetic information has a monetary value, and the bill requires that an individual be made aware of this material value before contracting to assign rights in his genetic information.[154] Furthermore, if an individual contracts to allow an entity to collect his DNA, and the entity intends to gain financially from the information provided in the DNA, the entity must reveal its commercial intent and pay fair market value for the individual's DNA.[155]

The enforcement mechanisms in the GBR are more effective than HIPAA and GINA because its property and privacy rights would extend to everyone, it would allow for private and public causes of action, and it contains civil and criminal penalty provisions.[156] In addition to an individual cause of action, the attorney general may seek an injunction or other equitable relief.[157] The bill provides for an automatic $5000 in damages for a violation, and $100,000 in damages if the violator profits from the unauthorized use of an individual's DNA.[158] Also, the GBR amends current Massachusetts Identity Theft Law to include an individual's genetic information, treating it as similar to an individual's Social Security number.[159] A violation of Massachusetts Identity Theft Law allows for a fine up to $5000 or imprisonment for up to two and a

felony. *Id.* at 686-87.

151. *See* An Act to Create a Genetic Bill of Rights, S. 1080, 187th Gen. Ct. § 1 (Mass. 2011); *see also* Huber & Vorhaus, *supra* note 131 (analyzing GBR's grant of property rights to DNA).

152. *See* Mass. S. 1080 § 1; *see also* Jeffrey Sanchez & Susan Fargo, *An Open Letter to the Massachusetts Joint Committee on Public Health*, BIOPOLITICAL TIMES (Mar. 31, 2011), http://www.biopoliticaltimes.org/downloads/An%20Open%20Letter_Genetic%20Bill%20of%20Rights.pdf (advocating in favor of GBR granting DNA privacy and property rights).

153. *See* Mass. S. 1080 § 1(b) (addressing rights for storing and bequeathing DNA); *see also* Huber & Vorhaus, *supra* note 131 (outlining GBR grant of property rights and impact on testamentary wills).

154. *See* Mass. S. 1080 § 1(b) (highlighting important monetary value of DNA); *see also* Huber & Vorhaus, *supra* note 131 (summarizing GBR disclosure requirements).

155. *See* Mass. S. 1080 § 1(b) (requiring compensation for use of genetic information); *see also* Huber & Vorhaus, *supra* note 131 (pointing to GBR requirements for commercial use of DNA).

156. *See* Mass. S. 1080 § 1 (granting "individual[s]" property and privacy rights in their genetic information); § 1(f) (allowing civil and criminal causes of action); *see also* Huber & Vorhaus, *supra* note 131 (reviewing GBR enforcement provisions).

157. *See* An Act to Create a Genetic Bill of Rights, S. 1080, 187th Gen. Ct. § 1(f) (Mass. 2011) (permitting attorney general to take action on behalf of Commonwealth against violators of GBR).

158. *Id.* (describing civil penalties for violating GBR); *see also* Huber & Vorhaus, *supra* note 131 (considering statutory damages for violating GBR provisions).

159. Mass. S. 1080 § 16 (amending Massachusetts Identity Theft Law to include genetic information); *see also* Huber & Vorhaus, *supra* note 131 (observing GBR changes state identity theft law).

half years, or both.[160] A person found guilty of identity theft may also be required to pay financial restitution, which could include costs incurred in correcting the victim's credit history, lost wages, and attorney's fees.[161]

3. The Scope of the Genetic Bill of Rights

Although the scope of protection provided in the GBR is broad, it does not provide absolute protection.[162] The GBR exempts law enforcement officials from its provisions if the officials act pursuant to their official duties.[163] Another GBR exception appears in the bill's definition of "genetic information."[164] The GBR defines "genetic information" as written or recorded information obtained and identified in a genetic test.[165] The GBR then defines a "genetic test" as "a test of human DNA, RNA, mitochondrial DNA, chromosomes or proteins for the purpose of identifying genes, inherited, genetic mutations or acquired genetic abnormalities, or the presence or absence of inherited or acquired characteristics in genetic material."[166] However, the GBR exempts genetic tests conducted for the purposes of detecting alcohol and drug abuse.[167]

Interestingly, even though the GBR was proposed as a response to the inadequate protections of current federal and state laws, critics argue that the GBR is too broad.[168] The bill's requirements for acquiring consent and paying compensation costs for use of an individual's genetic information could greatly impede scientific research and development.[169] Legislators are struggling to

160. MASS. GEN. LAWS ANN. ch. 266, § 37E(c) (2012) (stating penalty for committing identity fraud). Adding "genetic information" to the list of "personal identifying information" would place genetic information on par with a person's social security number, mother's maiden name, bank account numbers, and computer passwords. *See* Huber & Vorhaus, *supra* note 131 (noting impact of including genetic information in identity theft law).

161. *See* MASS. GEN. LAWS ANN. ch. 266, § 37(d) (requiring person found guilty of identity fraud to pay restitution in addition to penalty).

162. *See* Mass. S. 1080 § 1(g) (offering exceptions to violations of GBR).

163. An Act to Create a Genetic Bill of Rights, S. 1080, 187th Gen. Ct. § 1(g) (Mass. 2011) (exempting law enforcement officials from GBR provisions if violation occurs while executing official duties); *see also* Huber & Vorhaus, *supra* note 131 (noting exception for law enforcement).

164. *See* Mass. S. 1080 § 1(a) (defining "genetic information").

165. *Id.*

166. *Id.* § 1(a)(4) (defining "genetic test"); *see also* Jasmine A. Tehrani & Sarnoff A. Mednick, *Genetic Factors and Criminal Behavior*, 64 FED. PROBATION 24, 26 (Dec. 2000) (investigating whether genetic factors affect individual's criminal behavior). Recent genetics studies suggest that alcoholism is a genetic disorder and that it predisposes individuals to committing violent crimes. *See* Tehrani & Mednick, *supra*, at 26. Tehrani and Mednick assert that genetic factors should be considered in combating crime because individuals with certain genetic disorders may have an elevated risk of becoming criminals. *Id.*

167. *See* Mass. S. 1080 § 1(a)(4) (listing exceptions to genetic information protected by GBR provisions).

168. *See* Huber & Vorhaus, *supra* note 131 (considering whether GBR regulations too broad). Although the GBR has exceptions for officials carrying out official duties, the provisions might still be too broad to allow exceptions for other legitimate activities involving DNA collection. *Id.*

169. *See id.* (predicting negative impact of GBR on scientific research of DNA). "[S]uch a dramatic increase in the proscribed uses of genetic data, and in the restrictions and costs imposed even on lawful uses,

strike a balance between an individual's property and privacy rights and society's interest in benefiting from advancements in scientific research.[170] An improved understanding of the human genome could eventually lead to a cure or even prevention of genetic disorders.[171] Moreover, the efficacy of the GBR would be limited in geographic scope to Massachusetts, because no other state grants such extensive property and privacy rights to genetic information.[172]

D. Conflict of Laws in United States Criminal Procedure

The United States is unique compared to most other nations because it has parallel federal and state systems—whereby each state has police power over its people—and, as a result, each state has different criminal laws and procedures.[173] One advantage to federalism is that it keeps government local by allowing each state to enact laws that address the specific and distinct needs of the people of that state.[174] A disadvantage to federalism is that by empowering each state to have its own penal code, criminal procedure throughout the nation is fragmented and often inconsistent.[175] Conflict of laws is a common problem in U.S. criminal procedure—where two states have a central connection to a crime, but the states have contradictory laws.[176] The forum state is the state where the crime occurred, and the situs state is the state where the evidence is gathered.[177] A conflict-of-laws assessment determines whether the forum state's laws or the situs state's laws should be applied in the prosecution of the crime.[178]

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could well erect unintended barriers to the type of innovative genetic research conducted at numerous Massachusetts institutions . . . ." *Id.*

170. *See id.* (noting "delicate line to walk" between scientific progress and genetic privacy).

171. *See* Alten, *supra* note 146, at 382-83 (indicating possibility for scientific research to one day cure or prevent genetic disorders). "When the Human Genome Project began in 1990, optimism was boundless—researchers would have the means to look for cures to diseases, doctors would provide better medical advice, and patients, armed with advanced knowledge of a predisposition for a health problem, would seek preventative care." *Id.* at 383.

172. *See* Huber & Vorhaus, *supra* note 131 (noting GBR's efficacy limited by geography).

173. *See* Christopher L. Blakesley, *La Preuve Pénale et Tests Génétiques United States Report*, 46 AM. J. COMP. L. 605, 605 (1998) (comparing United States criminal law and procedure to European criminal procedure).

174. *See* United States v. Morrison, 529 U.S. 598, 617-18 (2000) (distinguishing between matters of local concern and matters of national concern).

175. *See* Blakesley, *supra* note 173, at 606-07 (discussing federalist system's effect on fragmentation of criminal procedure in United States). As a result of the federalist system, each state has its own adjudicative procedure, enforcement mechanisms, police, prosecutors, and prisons. *Id.*

176. *See id.* (noting "tremendous" variations in state laws).

177. *See* BLACK'S LAW DICTIONARY 726, 1513 (9th ed. 2009) (defining terms "forum" and "situs"). Forum is defined as the "the state in which a suit is filed." *Id.* at 726. Situs is defined as "the law of the place where the thing in issue is situated." *Id.* at 1513.

178. *See* John Bernard Corr, *Criminal Procedure and the Conflict of Laws*, 73 GEO. L.J. 1217, 1220-21 (1985) (evaluating factors to consider in conflict-of-laws analysis in criminal procedure).

of Massachusetts require that the accused be tried in the state and district where the crime was committed.[179] Consequently, the general rule is that Massachusetts has jurisdiction to prosecute an individual for a crime committed within its boundaries.[180] Conversely, criminal acts committed wholly outside of Massachusetts cannot then be prosecuted within the Commonwealth.[181]

A conflict-of-laws assessment may occur as a result of two different scenarios in criminal cases.[182] The first scenario would involve a forum state that has more defendant-protective laws than the situs state, while the second scenario would involve a forum state with less defendant-protective laws than the situs state.[183] In both of these scenarios, the admissibility of evidence hinges on whether the exclusionary rule applies.[184] The exclusionary rule is a judicially created rule intended to prevent police from committing constitutional violations, by suppressing evidence and confessions that are obtained by the police unconstitutionally.[185]

1. Forum State Has More Defendant-Protective Laws than the Situs State

The case of *Commonwealth v. Cryer*[186] is an example of how Massachusetts courts tend to rule on the admissibility of evidence gathered outside of Massachusetts when Massachusetts laws afford greater protection than the state where the evidence was gathered.[187] In *Cryer*, New Hampshire police arrested the defendant for first-degree murder in Everett, Massachusetts.[188] Massachusetts police went to New Hampshire to question the defendant.[189] While the defendant confessed to the murder to Massachusetts police, the defendant's attorney instructed New Hampshire police not to question the defendant without his presence.[190] The New Hampshire police never told the

179. *See* U.S. CONST. amend. VI (setting forth rights of defendants in criminal prosecutions). The Sixth Amendment states, in relevant part: "In all criminal prosecutions, the accused shall enjoy the right to a speedy and public trial, by an impartial jury of the State and district wherein the crime shall have been committed, which district shall have been previously ascertained by law . . . ." *Id.*; *see also* MASS. CONST. pt. 1, art. XIII (setting forth Massachusetts rights for defendants in regard to criminal prosecutions). Article Thirteen states that "[i]n criminal prosecutions, the verification of facts in the vicinity where they happen, is one of the greatest securities of the life, liberty, and property of the citizen." MASS. CONST. pt. 1, art. XIII.

180. *See In re* Vasquez, 705 N.E.2d 606, 610 (Mass. 1999) (upholding general rule requiring prosecution of crime in state where crime occurred).

181. *See id.* (denying state jurisdiction to prosecute crime committed wholly outside its boundaries).

182. *See* Corr, *supra* note 178, at 1220-21 (categorizing cases requiring conflict-of-laws analysis).

183. *See id.* (describing two categories of cases in conflict-of-laws assessment).

184. *See id.* at 1220 (considering application of exclusionary rule in conflict-of-laws assessment).

185. *See* Commonwealth v. Amral, 554 N.E.2d 1189, 1193 (Mass. 1990) (explaining policy behind exclusionary rule). "Suppression is a remedy designed by the courts, as a matter of policy, to deter future police misconduct." *Id.*

186. 689 N.E.2d 808 (Mass. 1998).

187. *See id.* at 809-10 (stating issue of case).

188. *See id.*

189. *Id.* at 810.

190. *Cryer*, 689 N.E. 2d at 810-11. Before the Massachusetts police questioned the defendant, they first

Massachusetts police about the attorney's instructions.[191]

At trial in Massachusetts, the defendant moved to suppress his confession because it violated Article Twelve of the Massachusetts Declaration of Rights.[192] The Supreme Judicial Court of Massachusetts denied the defendant's motion to suppress because Article Twelve does not apply to New Hampshire police, and the Massachusetts police were not aware of the attorney's instructions.[193] The court reasoned that excluding the confession would not further the policy considerations behind the exclusionary rule because suppressing the defendant's confession in New Hampshire would have no deterrent effect on Massachusetts police as it was the New Hampshire police who violated the defendant's rights.[194] Therefore, when Massachusetts is the forum state, and evidence is gathered in violation of a defendant's Massachusetts state rights by a situs state's police conduct, the evidence would still be admissible against the defendant at trial in Massachusetts.[195]

2. Forum State Has Less Defendant-Protective Laws than the Situs State

The case of *Commonwealth v. Miller*[196] addresses a situation where the forum state has less defendant-protective laws than the state where the evidence is gathered.[197] In *Miller*, the defendant was charged with committing murder in Beverly, Massachusetts, and was subsequently arrested in New York by New

asked the New Hampshire police if there were any instructions concerning the questioning of the defendant and were told that there were not. *Id.*

191. *Id.* at 808, 811.

192. *See* Commonwealth v. Cryer, 689 N.E.2d 808, 812-13 (Mass. 1998) (detailing defendant's argument for suppression of confession). The defendant in *Cryer* argued that his confession should be suppressed because his waiver of his *Miranda* rights was not valid, as he was not informed of his attorney's request to be present. *Id.* at 812. Article Twelve of the Massachusetts Constitution arguably afforded him greater protection than New Hampshire laws in regard to waiving his *Miranda* rights. *Id.* at 812-13. Massachusetts case law has held that a defendant's waiver of his *Miranda* rights is not valid when the police know that the defendant's attorney instructed that he be present during questioning and the police do not inform the defendant of the attorney's request. *Id.* at 812; *see also* Commonwealth v. Sherman, 450 N.E.2d 566, 571 (Mass. 1983) (holding defendant's *Miranda* waiver invalid if not informed of attorney's instructions); Commonwealth v. McKenna, 244 N.E.2d 560, 566 (Mass. 1969) (holding defendant's *Miranda* waiver invalid if not informed of attorney's instructions). The court in *Cryer*, however, noted that the rulings of *Sherman* and *McKenna* were overruled by the Supreme Court. *Cryer*, 689 N.E.2d at 812; *see also* Moran v. Burbine, 475 U.S. 412, 421-22 (1986) (holding failure to inform defendant of attorney's instructions does not violate voluntariness of *Miranda* waiver). The *Cryer* court next noted that despite the Supreme Court's ruling in *Moran*, the voluntariness requirement to waive *Miranda* warnings under Article Twelve of the Massachusetts Constitution might still require that police inform the defendant of the attorney's instructions. *Cryer*, 689 N.E.2d at 812-13; *see also* MASS. CONST. pt. 1, art. XII (guaranteeing defendant due process of law and effective assistance of counsel).

193. *See Cryer*, 689 N.E.2d, at 813 (denying defendant's motion to suppress).

194. *See id.* at 813 (setting forth reasoning for denying defendant's motion to suppress).

195. *Id.* (holding Massachusetts laws inapplicable to New Hampshire police conduct out of state); *see also* Commonwealth v. Banville, 931 N.E.2d 457, 464 (Mass. 2010) (applying Maryland's less defendant-protective laws over Massachusetts's higher probable cause standard).

196. No. 01 77 CR11 69-001, 2002 Mass. Super. LEXIS 237 at *1 (Mass. Super. Ct. July 9, 2002).

197. *See id.* at *5 (describing conflict-of-laws issue before the court).

York City Police.[198] Massachusetts police went to New York, questioned the defendant, and heard the defendant's confession.[199]

At trial in Massachusetts, the defendant filed a motion to suppress his confession because he did not have an attorney present, and in New York the right to counsel attaches when charges are filed.[200] In contrast, under Massachusetts law, the right to counsel only attaches if the defendant invokes his right to counsel.[201] The court held that Massachusetts law should apply because the general rule is that the law of the forum governs as to procedure and admissibility of evidence.[202] The forum state has a superior interest to the situs state in ensuring that crimes committed within its boundaries are effectively prosecuted.[203] Therefore, when the forum state grants less

198. *See id.* at *1, *3 (stating facts of case).

199. *See id.* at *4.

200. *See Miller*, 2002 Mass. Super. LEXIS 237, at *11 (detailing defendant's argument to suppress his confession).

201. *See* N.Y. CRIM. PROC. LAW § 100.10 (McKinney 2012) (defining accusatory instrument as including felony complaint); *see also Miller*, 2002 Mass. Super. LEXIS 237, at *5 (comparing Massachusetts and New York criminal procedure laws regarding defendant's right to attorney); People v. Settles, 385 N.E.2d 612, 615 (N.Y. 1978) (holding right to counsel in New York attaches upon filing of accusatory instrument); D. Christopher Dearborn, *"You Have the Right to an Attorney," But Not Right Now: Combating* Miranda*'s Failure by Advancing the Point of Attachment Under Article XII of the Massachusetts Declaration of Rights*, 44 SUFFOLK U. L. REV. 359, 359-60 (2011) (asserting right to counsel under Massachusetts law often does not attach until defendant arraigned). In Massachusetts, unless an accused knows an attorney to call, he can go for as long as four days in custody before the court appoints him counsel. *See* Dearborn, *supra*, at 360-61.

202. *See* Commonwealth v. Miller, No. 01 77 CR11 69-001, 2002 Mass. Super. LEXIS 237, at *11 (Mass. Super. Ct. July 9, 2002) (denying defendant's motion to suppress and refusing to apply New York law). The court considered the rulings of other state courts in deciding whether a forum state has to apply the laws of a situs state. *Id.* at *7-8. *See generally* People v. Saiken, 275 N.E.2d 381 (Ill. 1971) (determining when forum law governs over situs law). The court in *Saiken* asserted that "where a conflict occurs between the standards of two jurisdictions, there is no constitutional barrier, other than the fourth amendment (sic), which precludes one jurisdiction from refusing to honor the standards of another relative to the validity of an arrest or search." *Id.* at 385. The court in *Miller* held that it was free to reject New York law and apply Massachusetts law as long as Massachusetts law at least satisfied Fourth Amendment requirements. *See Miller*, 2002 Mass. Super. LEXIS 237, at *9. *See generally* Burge v. Texas, 443 S.W.2d 720 (Tex. Crim. App. 1969) (considering when to apply forum law over situs law). The court in *Burge* concluded that forum law governs the rules of procedure and evidence, reasoning that any other approach would result in "endless perplexity." *Id.* at 723; *see also Saiken*, 275 N.E.2d at 381 (comparing impact of procedural and substantive matters on conflict of laws). However, if the conflict-of-laws problem questions the admissibility of evidence on the grounds that it was wrongfully obtained, then the question is no longer a procedural matter, but is instead a substantive matter. *Saiken*, 275 N.E.2d at 385. When a substantive matter is at issue, the court will apply the "significant relationship" or "center of gravity" test to decide whether the forum state or the situs state has the greatest interest in having its law applied. *Id.* In considering whether the forum state or the situs state is the "center of gravity" or has the more "significant relationship" to the crime, courts consider where the crime was committed, where it will be prosecuted, where the defendant and victim are residents, and the witnesses' locations. *Id.* In *Miller*, the court determined that Massachusetts had a more significant relationship to the crime than New York because the crime was committed in Massachusetts, both the defendant and the victim were Massachusetts residents, Massachusetts police questioned the defendant, and the crime was being prosecuted in Massachusetts. *See Miller*, 2002 Mass. Super. LEXIS 237, at *11.

203. *See Miller*, 2002 Mass. Super. LEXIS 237, at *9-10 (analyzing policy behind general rule allowing forum state to apply forum law).

protection than the state where the evidence is gathered, the forum state's law will apply.[204]

3. Full Faith and Credit Restrictions on Conflict-of-Laws Assessment

Determining which law applies to a criminal prosecution is further complicated by the Full Faith and Credit Clause of the United States Constitution, which requires that states recognize the laws and judgments of other states.[205] Although the Full Faith and Credit Clause seems restrictive, the Supreme Court has ruled its requirements are easily satisfied by a showing from the forum state that its decision to apply forum law over a situs state's law is based on the forum's legitimate state interest.[206] For instance, a forum state always has a legitimate interest in crimes committed within its borders.[207]

The ease with which states can satisfy the Full Faith and Credit Clause mandate may actually jeopardize the effectiveness of both the forum and situs state's laws.[208] In situations similar to those in *Cryer* and *Miller*, the forum state's laws are often undermined, because the police in a defendant-protective forum state may attempt to circumvent the laws of their own state by encouraging law enforcement in the less protective situs state to gather evidence which would otherwise violate the forum's laws.[209] The forum police know the forum court will give full faith and credit to the situs state's laws, as

204. *See id.* at *11-14 (noting policy reasons for applying less defendant-protective forum law over more protective situs law). Forum police cannot reasonably be expected to know situs state laws. *Id.* at *13-14. A forum state should not be prevented from admitting evidence that is legally admissible under its laws merely to serve as a "wrist slap" to the police in the situs state who have no interest in the prosecution of the crime. *See* People v. Orlosky, 115 Cal. Rptr. 598, 601 (Cal. Ct. App. 1974) (holding policy behind exclusionary rule not furthered by applying situs laws).

205. *See* U.S. CONST. art. IV, § 1 (describing required relationships between states and methods for congressional enforcement). The Full Faith and Credit Clause states: "Full Faith and Credit shall be given in each State to the public Acts, Records, and judicial Proceedings of every other State. And the Congress may by general Laws prescribe the Manner in which such Acts, Records and Proceedings shall be proved, and the Effect thereof." *Id.*

206. *See* Corr, *supra* note 178, at 1224 (declaring Full Faith and Credit Clause not "significant barrier" to conflict-of-laws assessment). According to case law, the Full Faith and Credit Clause only requires that the forum state have a "legitimate interest" in the prosecution of crimes. *Id.* The forum's interest need not be greater than the situs state's interest, but it does have to be more than a "*de minimis* interest." *Id.*; *see also* RESTATEMENT (SECOND) OF CONFLICT OF LAWS § 103 (1971) (explaining limitations on Full Faith and Credit Clause). An exception to the Full Faith and Credit Clause is when a forum state's recognition of a sister state's laws would cause an "improper interference" with the forum state's laws. RESTATEMENT (SECOND) OF CONFLICT OF LAWS § 103 (1971).

207. *See generally* Carroll v. Lanza, 349 U.S. 408 (1955) (determining standard for satisfying Full Faith and Credit Clause requirements). The Full Faith and Credit Clause does not require subserviency from the state where the crime occurred. *Id*. at 414; *see also* Corr, *supra* note 178, at 1225 (extending *Carroll* holding to conflict of laws in criminal procedure).

208. *See* Corr, *supra* note 178, at 1227-28 (suggesting traditionally low threshold for Full Faith and Credit Clause diminishes forum and situs policies).

209. *See id.* The current interpretation of the Full Faith and Credit Clause drains it of "vitality" and allows forum police to encourage situs police to ignore the forum's laws. *Id.*

long as the situs laws do not violate the Federal Constitution.[210]

Similarly, the laws of the situs state are jeopardized because the police of the situs state are more inclined to violate their state's criminal procedure laws, as they know that the crime will be prosecuted in a state with less restrictive laws.[211] The police in the situs state know that the forum state court does not have to give full faith and credit to the situs state's laws because the forum state has a superior interest in prosecuting the crime and could thus apply its less defendant-protective laws.[212] Amidst all of the confusion surrounding the conflict-of-laws assessment, it is clear that although a state may grant its citizens more extensive constitutional rights than other states, there is no guarantee that those rights will always be enforced.[213]

III. ANALYSIS

A. Why the Massachusetts Genetic Bill of Rights Is Ineffective

Despite the laudable intentions behind the Massachusetts GBR, the proposed legislation is seriously flawed.[214] The GBR provisions are ineffective and fail to address crucial Fourth Amendment concerns regarding the collection and use of genetic information.[215] The GBR exacerbates the already perplexing patchwork of legislation regulating the use of genetic information by creating significant gaps in the scope of its protection.[216] The GBR exempts law

210. *See* Blakesley, *supra* note 173, at 605 (setting forth boundaries under which state can disregard another's laws). The rights and protections guaranteed by the United States Constitution are merely the minimum that states can guarantee. *Id.* State constitutions are free to provide more protection than the Federal Constitution. *Id.* Therefore, if a forum state declines to give full faith and credit to a situs state's laws, the forum state must still provide the amount of protection guaranteed by the Federal Constitution. *See* Corr, *supra* note 178, at 1218 (noting United States Constitution as floor for procedural protections for criminal defendants). The decision of a more defendant-protective forum state to apply the less protective situs state law is "insensitive to the realities of police work." *Id.* at 1236-37.

211. *See* Corr, *supra* note 178, at 1227 (noting damage to situs state's exclusionary rule). Because the situs state police know the evidence collected will be used in criminal prosecution in another state, they will likely disregard the rules of their own jurisdiction. *Id.*

212. *See id.* at 1221 (observing majority of courts apply forum state's law under interest analysis).

213. *See id.* at 1218 (characterizing conflict of laws in criminal procedure as "trend[ing] towards disuniformity"). As long as states continue to vary in their criminal procedures, many cases will arise where "a defendant is prosecuted in one state on the strength of evidence obtained in another state." *Id.*

214. *See* Huber & Vorhaus, *supra* note 131 (noting several exceptions to GBR consent and disclosure requirements); *see also supra* notes 162-172 and accompanying text (evaluating potential barriers to GBR efficacy).

215. *See* U.S. CONST. amend. IV (protecting right to freedom from unreasonable searches and seizures); *see also* Huber & Vorhaus, *supra* note 131 (noting GBR's potential to provide excessive privacy protections to minority of individuals); *supra* notes 26-34 and accompanying text (studying original purpose behind Fourth Amendment and value of privacy in American society).

216. *See* Huber & Vorhaus, *supra* note 131 (noting GBR creates safe harbors for law enforcement with no protection of legitimate scientific research). "[T]he bill may be an overly protectionist 'legislative band-aid' that would grant excessive genetic rights and privacy protections to a minority of individuals at the expense of more meaningful commercial, scientific and clinical innovation." *Id.*; *see also supra* notes 137-148 and

enforcement officers from its provisions, exempts genetic tests for alcohol and drug abuse disorders, and does not require that the person unlawfully taking the DNA have a specific intent to analyze the DNA.[217] Also, the GBR makes a dangerous mistake by granting genetic information both property and privacy rights because these two legal theories are contradictory and counterproductive.[218] The GBR is not appropriate legislation to protect genetic information.[219]

1. More Patchwork Legislation

By exempting law enforcement officers from its provisions, the GBR fails to protect the exact type of government intrusion against which the Fourth Amendment was intended to guard.[220] The writs of assistance cases, which triggered the inclusion of the Fourth Amendment in the Bill of Rights, involved government agents who were permitted to perform arbitrary searches of private citizens' homes.[221] As Otis stated in his argument against the writs, such arbitrary power places American citizens at the mercy of government officers.[222]

The GBR's exemption for law enforcement officers would allow police to continue to take an individual's genetic information without a warrant.[223] As long as law enforcement officers are not required to procure a warrant to obtain an individual's DNA, they can arbitrarily collect DNA and add it to the growing government DNA database.[224] There is no law preventing the police

accompanying text (criticizing adequacy and effectiveness of current federal and state legislation protecting genetic information).

217. *See* An Act to Create a Genetic Bill of Rights, S. 1080, 187th Gen. Ct. § 1 (Mass. 2011) (stating exceptions for law enforcement, substance abuse, proscription of nonconsensual disclosure of genetic information).

218. *See id.* § 1 (granting individual both privacy and property rights in genetic information); *see also* Suter, *supra* note 10, at 803-11 (warning against dangers of granting both property and privacy rights in genetic information); *infra* notes 258-270 and accompanying text (analyzing harmful effects of combining property and privacy rights in genetic information).

219. *See* Joh, *supra* note 134, at 682-87 (highlighting importance of criminalizing nonconsensual DNA analysis); *see also* Joh, *supra* note 12, at 860-61 (explaining dangers of allowing law enforcement to collect abandoned DNA); Suter, *supra* note 10, at 803-11 (explaining dangers of treating DNA as property); Tehrani & Mednick, *supra* note 166, at 24-26 (considering possibility of link between genetics and crime).

220. *See* Joh, *supra* note 12, at 860-68 (analyzing Fourth Amendment application to police collection of DNA); *see also supra* notes 26-34 and accompanying text (outlining historical context behind purpose of Fourth Amendment).

221. *See* Sklansky, *supra* note 16, at 1743 (recognizing impact of writs of assistance cases on Fourth Amendment drafting).

222. *See* Grasso, *supra* note 30, at 319 (paraphrasing Otis's oral argument against writs of assistance).

223. *See* Commonwealth v. Cabral, 866 N.E.2d 429, 433 (Mass. App. Ct. 2007) (holding no warrant needed to collect abandoned DNA); *see also* Monteleoni, *supra* note 62, at 255-57 (describing police investigative techniques for collecting abandoned DNA).

224. *See* Joh, *supra* note 12, at 860-68 (warning against possible police misconduct when no regulation prevents abandoned DNA collection).

from collecting DNA from everyone they possibly can in order to compile a comprehensive index of the genetic information of each and every citizen.[225] The scary result is that an individual, whose DNA is found at a crime scene, even though he was not involved in any way with the crime, could be unfairly targeted by the police.[226] He will have lost his presumption of innocence.[227]

If the framers of the U.S. Constitution intended for individuals to be secure in their "persons, papers, houses, and effects," then they certainly intended individuals to be secure in their genetic information.[228] Arguably, genetic information is considered part of an individual's "person," and as such, it should require a warrant before extraction.[229] Moreover, the Fourth Amendment treats an individual's home as sacred because of its private nature.[230] And genetic information is undoubtedly more sacred than the home because it contains extremely intimate and private information about an individual's genetic makeup.[231] Thus, the exemption of law enforcement officers from the GBR provisions ignores the fundamental purpose of the Fourth Amendment—freedom from tyranny.[232]

Another flaw in the GBR's scope of protection is that its definition of "genetic tests," by excluding tests for alcohol and drug abuse, leaves a vast

225. *See id.* at 874 (foreseeing potential misuse of abandoned DNA by law enforcement).

226. *See id.* (describing danger of allowing abandoned DNA collection without proper justification).

> [Collection of abandoned DNA] is a backdoor to population-wide data banking. If criminal procedure law imposes virtually no restrictions over the collection of abandoned DNA, the police may collect it from anyone about whom they have only a vague suspicion, or none at all. While discretion is an inevitable aspect of police work, the risk of discriminatory treatment or harassment by the police surely increases when no legal justification for their actions is required.

Id.

227. *See* Persky, *supra* note 8, at 16 (noting intrusiveness of DNA testing and constitutional invasion of privacy concerns). "'[T]he question is: Why, if you are arrested, should you all of a sudden be treated like somebody who has been convicted of a crime?'" *Id.* (quoting Sheldon Krimsky, professor at Tufts University).

228. *See* U.S. CONST. amend. IV (guaranteeing freedom from unreasonable searches and seizures); *see also supra* note 26 and accompanying text (outlining specific text and protection of Fourth Amendment); *supra* note 52 and accompanying text (asserting individual's home as definitively protected by Fourth Amendment). DNA reveals extensive amounts of information about a person. *See* Persky, *supra* note 8, at 16 (noting privacy rights advocates argue DNA extraction requires Fourth Amendment protection).

229. *See* Joh, *supra* note 12, at 859 (explaining government collection of DNA as "problem worthy of serious attention"). Joh describes DNA as being part of an individual's person. *Id.*

230. *See* U.S. CONST. amend. IV (granting private home utmost protection); *see also* Kyllo v. United States, 533 U.S. 27, 40 (2001) (holding use of sense-enhancing technology to search interior of home unconstitutional). The *Kyllo* Court reasoned that "'[a]t the very core' of the Fourth Amendment 'stands the right of a man to retreat into his own home and there be free from unreasonable governmental intrusion.'" *Kyllo*, 533 U.S. at 31; *see also supra* note 52 and accompanying text (describing protection afforded to home).

231. *See* Markett, *supra* note 11, at 208 (pointing to important role genes play in shaping an individual).

232. *See* Sklansky, *supra* note 16, at 1740 (considering historical context in which Fourth Amendment written); *see also supra* notes 29-34 and accompanying text (studying impact of writs of assistance cases on framers of U.S. Constitution).

number of individuals exposed.[233] As a consequence, when an individual is suspected of committing a crime, but the police do not have probable cause to arrest, it is foreseeable that the police will obtain the individual's DNA and then analyze it for a genetic disorder related to alcohol and drug abuse.[234] If the individual's DNA is positive for a predisposition to alcohol and drug abuse, the police may then try and use this genetic information to establish probable cause that this individual committed the crime because his genes show that he has a tendency towards criminal behavior.[235]

However, scientific research has made clear that genes do not necessarily control an individual's behavior.[236] Environmental factors also play an important role in an individual's behavior.[237] Allowing an individual's DNA to be tested for a predisposition to alcohol and drug abuse would lead to a deterministic society where people are not judged based on their actions, but rather based on their genetic makeup.[238]

Furthermore, the language of the GBR does not explicitly require the person unlawfully taking the DNA to have a specific intent to analyze it.[239] The GBR prohibits disclosure of an individual's genetic information, but does not prohibit analysis of the genetic information.[240] Consequently, anyone can obtain an individual's DNA without his consent and then analyze the DNA to obtain the individual's genetic information, without disclosing the

233. *See* An Act to Create a Genetic Bill of Rights, S. 1080, 187th Gen. Ct. § 1(a)(4) (Mass. 2011) (listing exception of genetic tests for drugs and alcohol).

234. *See* Joh, *supra* note 12, at 874 (suggesting absence of law regulating police collection of abandoned DNA encourages such collection).

235. *See* Beecher-Monas & Garcia-Rill, *supra* note 13, at 306-07 (criticizing judges' tendency to admit genetic predictions of future dangerousness). Beecher-Monas and Garcia-Rill critique admissibility of evidence showing a genetic predisposition for dangerousness: Admissibility of genetic predictions of future violence "is astonishing in a system that embraces the tenet that only facts having rational probative value should be admissible in the search for truth. Yet judges continue to admit predictions that no one seriously argues can meet these standards." *Id.*; *see also* Tehrani & Mednick, *supra* note 166, at 26 (examining possible link between genetic predisposition for alcoholism, drug abuse, and criminal behavior).

236. *See* Tehrani & Mednick, *supra* note 166, at 24 (recognizing environmental factors also play important role in individual's behavior). Tehrani and Mednick highlight the various factors that influence an individual's behavior:

> Genes alone do not cause individuals to become criminal. Moreover, a genetic predisposition towards a certain behavior does not mean that an individual is destined to become a criminal. The notion that humans are programmed for certain behaviors fails to acknowledge important environmental factors which are likely to mediate the relationship between genetics and crime.

Id.

237. *See id.* (offering examples of how environmental factors influence behavior). Despite a genetic predisposition for alcoholism and violence, a positive family environment could neutralize that genetic trait. *Id.*

238. *See id.* (stressing inaccuracy of judging individual based on genetics alone).

239. *See* An Act to Create a Genetic Bill of Rights, S. 1080, 187th Gen. Ct. § 1 (Mass. 2011) (prohibiting disclosure of genetic information without informed consent of individual).

240. *See id.*

information.[241] The analysis of DNA is the most detrimental aspect of DNA theft because once a person knows an individual's genetic information he can discriminate against that individual based on his genetic information, without ever disclosing the information.[242]

Specific intent to analyze DNA is crucial to a charge of DNA theft because otherwise practically anyone could be charged with the crime.[243] Humans leave traces of their DNA everywhere: in clothing, combs, and garbage.[244] In a common scenario where a friend takes an individual's baseball hat, under the GBR, if the individual's DNA is on the hat, the friend could be charged with DNA theft.[245] Therefore, without specifying that the person taking the DNA have a specific intent to analyze the genetic information, people who inadvertently obtain another individual's DNA would be subject to criminal charges.[246] The GBR lacks any specificity regarding the point at which obtaining DNA becomes a crime, and this greatly undermines the effectiveness and validity of the legislation.[247]

2. Combining Privacy and Property: Mixing Oil and Water

The Massachusetts GBR is also ineffective because it attempts to grant an individual both privacy and property rights in his genetic information, which is an incompatible combination.[248] Applying the Hohfeldian framework to DNA would allow genetic information to be treated as property because a person has rights, powers, privileges, and immunities in his DNA.[249] A person undoubtedly has a *right* to possess his DNA as it is physically located in his cells and is used to determine his genetic makeup such as his hair and eye

241. *See* Joh, *supra* note 134, at 679-80 (cautioning genetic analysis poses most serious harm).

242. *See id.* at 679 (recognizing invasion of privacy occurs when DNA analyzed without consent, regardless of disclosure). As long as the law does not prohibit DNA analysis, a person can obtain an individual's DNA, and then blackmail the individual without ever disclosing the genetic information. *Id.* at 680.

243. *See id.* at 690-91 (explaining importance of requiring specific mental state for DNA theft).

244. *See* Gardner, *supra* note 7, at 51 (explaining individuals leave DNA traces everywhere). "'If you smoke a cigarette and drop it or if you go to the barbershop and your hair is cut, you are leaving your DNA behind.'" *Id.* (quoting Jules Epstein, law professor at Widener University).

245. *See* Joh, *supra* note 134, at 690-91 (offering example of DNA inadvertently obtained in everyday interactions). DNA could easily be obtained from common items such as used dental floss, ear wax, electric razor clippings, and chewed gum. *Id.* at 690.

246. *See id.* at 690-91 (explaining effect of criminalizing DNA theft without requiring specific mental state).

247. *See id.* (explaining specific mental state requirement avoids unnecessarily targeting individuals who innocently obtain another's DNA).

248. *See* An Act to Create a Genetic Bill of Rights, S. 1080, 187th Gen. Ct. § 1 (Mass. 2011) (granting individuals property and privacy rights in genetic information); *see also* Suter, *supra* note 10, at 803-11 (cautioning against granting individual both privacy and property rights in DNA).

249. *See* Valerio Barrad, *supra* note 74, at 1050 (noting relationship between person and DNA has characteristics of property interests).

color.[250] Although very difficult, an individual has *power* to restrict access by others to his DNA by controlling the disposal of his hair and bodily fluids.[251] Next, an individual has *privileges* in regard to his DNA because he can refuse to comply with a request to extract his DNA sample.[252] Finally, an individual also has *immunity* in regard to his DNA because he cannot be compelled to give his DNA to others.[253]

The compilation of genetic information contained in DNA could possibly meet the secrecy and competitive value requirements to be considered a trade secret.[254] Similar to how the competitors in *E.I. duPont deNemours & Co.* kept their method for manufacturing methanol secret, an individual could be deemed to keep his genetic information secret by not voluntarily submitting a blood sample.[255] Also similar to how the competitors in *E.I. duPont deNemours & Co.* valued the plant's secret method for manufacturing methanol, an individual's genetic code is highly valued by pharmaceutical companies that are already investing millions of dollars in biotechnology research.[256]

Privacy rights are an appealing approach to protecting DNA because a right to privacy is the shield that protects individuals from government interference with their everyday lives.[257] Understandably, granting both property and privacy rights to genetic information appears ideal.[258] Upon closer scrutiny,

250. *See id.* (analyzing individual's right in DNA). An individual has a right to possess and use his DNA without the threat of others altering his genetic makeup. *Id.* at 1058. An individual's right to possess his DNA creates "a correlative duty in others to avoid interrupting that person's use, such as by irradiating the person and risking genetic change." *Id.*

251. *See id.* (analyzing individual's power over DNA). A person has power over his DNA because he can decide to give his DNA to his offspring or donate it to a sperm bank. *Id.* An individual's offspring or the sperm recipient from the sperm bank "has a correlative liability that the legal relationship between the donor and the recipient will be altered by such an act." *Id.*

252. *See id.* (examining individual's privilege in DNA). An individual has a privilege in his DNA because he can refuse to give it away by refusing to give blood, hair, or tissue samples. *Id.* As a result, the person requesting a DNA sample has a correlative duty not to compel such a sample. *Id.*

253. *See* Valerio Barrad, *supra* note 74, at 1050-52 (considering individual's immunity in DNA). An individual has immunity in his DNA because he cannot be forced to donate his genetic material, even if his DNA is needed to save the lives of others. *Id.* at 1051. Consequently, other people who may benefit from the individual's DNA have a correlative disability from requiring an individual to donate his DNA. *Id.* at 1058.

254. *See* UNIFORM TRADE SECRETS ACT § 1(4) (2011) (describing trade secret as "formula, pattern, or compilation"); *see also* GENOMEWEB, *supra* note 103 (proposing trade secret model as ideal for protecting genetic information). The trade secret model would offer individuals control over who gains access to their genetic information by requiring an individual's consent before his genetic information could be used. *See* GENOMEWEB, *supra* note 103. Additionally, after consent is given, the genetic information must still remain secret. *Id.*

255. *See* 431 F.2d 1012, 1016 (5th Cir. 1970) (describing precautions taken to keep manufacturing method secret); *see also* GENOMEWEB, *supra* note 103 (stressing need for individual's informed consent before granting access to genetic information).

256. *See* Krimsky, *supra* note 108, at 19 (emphasizing rapid potential for financial gains with access to DNA); *see also* UNIFORM TRADE SECRETS ACT § 1 (2011) (requiring economic value to qualify as trade secret).

257. *See* Suter, *supra* note 10, at 764-66 (distinguishing privacy from property rights); *see also supra* notes 112-119 and accompanying text (emphasizing privacy law protections stronger than property law).

258. *See* Suter, *supra* note 10, at 803-04 (introducing idea of granting both privacy and property rights to

however, the combination of privacy and property becomes calamitous.[259] Granting both privacy and property rights would be counterproductive and potentially cause even greater harm.[260] Privacy protection of DNA will result in a higher market value for such information because when information remains secret, it is valued more.[261] Someone in a desperate financial situation, perhaps a patient overwhelmed by medical bills, might be convinced to sacrifice her privacy rights in exchange for money by allowing doctors to use her genetic information for research and profit.[262] The GBR explicitly refers to genetic information as a commodity by requiring that individuals be made aware their genetic information has material value.[263] Property rights and privacy rights cannot coincide in protecting DNA because of the risk that individuals will be coerced into selling their genetic information, essentially selling access to their identity.[264]

Protecting genetic information under property law would convert an individual's DNA into an object of ownership, separate from the individual, and capable of being owned and controlled by someone else.[265] DNA contributes immensely to an individual's unique characteristics and overall identity.[266] Commodification of DNA would essentially permit an individual's identity to be bought and sold.[267] As price tags are attached to personal identity, an individual loses his sense of bodily integrity because he associates himself with a monetary value rather than recognizing his true self-worth as a

genetic information).

259. *See id.* (warning combination of privacy and property law ineffective and harmful). Property law and privacy law grant different but equally desired protections, so it is only natural to consider granting individuals "maximum protection in their genetic information by granting them both property and privacy rights." *Id.* at 803.

260. *See id.* at 803-04 (opining property and privacy rights together ineffective to protect DNA). Treating genetic information partially as property and partially as subject to privacy will cause individuals to concentrate more on the possible financial gains in selling their genetic information, as opposed to viewing their genetic information in terms of its dignitary value. *Id.* at 808.

261. *See id.* at 804-05 (commenting on increased value of information when maintained as secret). Granting privacy rights to genetic information would result in an increased demand to purchase such secret information. *Id.* at 804.

262. *See* Suter, *supra* note 10, at 805 (stressing individual might make inappropriate decisions if motivated by financial gains). Suter is specifically concerned with the doctor-patient scenario because the patient and doctor will bargain over medical care instead of concentrating on what is best for the patient. *Id.* at 806.

263. *See* An Act to Create a Genetic Bill of Rights, S. 1080, 187th Gen. Ct. § 1(b) (Mass. 2011) (requiring individuals' awareness of genetic information's market value).

264. *See* Suter, *supra* note 10, at 807 (discouraging combination of privacy and property rights); *see also* Allen, *supra* note 120, at 738-40 (indicating importance of privacy to individual's self-worth). "Privacy has value relative to normative conceptions of spiritual personality, political freedom, health and welfare, human dignity, and autonomy." Allen, *supra* note 120, at 738.

265. *See* Rao, *supra* note 68, at 444-45 (cautioning against treating genetic information as property).

266. *See* Markett, *supra* note 11, at 208 (noting "highly personal" nature of information contained in DNA); *see also* Suter, *supra* note 10, at 737 (pointing to important role genes play in shaping sense of self).

267. *See* Rao, *supra* note 68, at 428-29 (discussing danger of allowing commodification of DNA).

human being.[268]

The monetary issue became evident when doctors at the Miami Children's Hospital viewed their patients' genetic information as a mere commodity by charging expensive royalty fees for Canavan testing.[269] In strong contrast, the patients' families associated a much more profound personal value with the testing because it determined the fate of their children's health and future.[270] By restricting access to testing, individuals who cannot afford testing tragically lose a sense of self-worth.[271]

B. The Ideal Genetic Bill of Rights

Despite the several flaws in the Massachusetts GBR, the essential purpose behind the legislation, protecting the privacy of genetic information, is still worthwhile.[272] Science will inevitably continue to explore and gain a better understanding of genetics and the role it plays in shaping an individual.[273] Many individuals feel threatened by the advancements in genetics and are scared that DNA will eventually expose private aspects of their lives.[274] The ability of DNA to reveal one's future health risks, temperament, capacities, and physical appearance makes individuals vulnerable to discrimination, stigmatization, and overall unwanted exposure.[275] Thus, legislation to protect

268. *See* Suter, *supra* note 10, at 800 (contending commodification of DNA harmful to self-identity and integrity); *see also* Samuelson, *supra* note 120, at 1143 (denoting treatment of genetic information as property "morally obnoxious").

269. *See* Greenberg v. Miami Children's Hosp. Research Inst. Inc., 264 F. Supp. 2d 1064, 1068 (S.D. Fla. 2003) (detailing doctors' financial gain). The doctors in *Greenberg* earned royalties in excess of $75,000 from patenting the Canavan gene acquired from the patients' genetic information. *Id.*

270. *See id.* at 1072-73 (considering plaintiffs' claim for unjust enrichment). The court found that the plaintiffs pled sufficient facts to support a claim for unjust enrichment against the doctors. *Id.* at 1073. The plaintiffs asserted that the doctors violated "the fundamental principles of justice, equity, and good conscience." *Id.* at 1072.

271. *See* Suter, *supra* note 10, at 740-41 (distinguishing value of genetic information to patients compared to researchers). To the patients, the genetic information has "personal value," whereas to the doctors, the genetic information is "simply a commodity." *Id.* at 741.

272. *See* Gruber, *supra* note 139 (urging need for legislation to protect "tsunami of DNA data"). The absence of legislation regulating genetic-information use has led to systematic violations of basic human rights. *Id.* The GBR would offer Americans significantly greater protection than current legislation over their genetic information. *Id.* Enacting legislation to guard against the harmful implications of advancing technology would place the United States in a leading role as protector of human rights. *Id.*

273. *See id.* (describing a "genetic revolution"); *see also* Huber & Vorhaus, *supra* note 131 (predicting continued scientific advancements in understanding genetics). In the last decade, the discovery and mapping of the human genome was widely successful. Huber & Vorhaus, *supra* note 131. Over the next decade, science will focus on understanding genetic information and its possible uses. *Id.*

274. *See* Suter, *supra* note 10, at 738 (observing Americans' fear of advancing technology and potential threat to personal privacy). Ninety-two percent of Americans are "concerned" with the threat of improper use of their genetic information, and sixty-four percent are "very concerned." *Id.*

275. *See id.* at 737 (describing extensive amount of personal information revealed by DNA). Each individual's DNA is unique and is "deeply connected" to an individual's identity. *Id.* at 739.

DNA is essential to safeguarding basic human rights.[276]

The ideal GBR would not leave any holes or blanket exemptions.[277] In particular, law enforcement should not be exempt from respecting an individual's genetic privacy.[278] Additionally, the ideal GBR would ban testing for genetic disorders involving potential alcohol or drug abuse, which would otherwise allow police to target a person based on his genetics rather than his conduct.[279] An effective GBR would also make DNA theft a specific-intent crime by prohibiting the act of analyzing an individual's DNA without his consent.[280] Importantly, the ideal GBR would protect DNA with privacy rights, and only privacy rights.[281] Unlike property rights, which would treat DNA as a commodity, privacy rights offer stronger Fourth Amendment protection and greater legal remedies.[282] Thus, a carefully crafted GBR that guards against all threats to genetic privacy is essential to preserving an individual's Fourth Amendment privacy interests.[283]

C. Even the Ideal Genetic Bill of Rights Cannot Survive the Conflict of Laws

Unfortunately, even the ideal GBR would be ineffective in cases where a crime involves more than one state.[284] If Massachusetts criminalizes DNA theft, then Massachusetts would likely be considered a defendant-protective forum state.[285] Similar to the outcome in *Cryer*, where Massachusetts's Article Twelve rights were not applied to evidence gathered in New Hampshire, the GBR would not apply to DNA collected out of state.[286] Consequently, when a

276. *See* Gruber, *supra* note 139 (asserting that protection of genetic privacy advances human rights).

277. *See* Joh, *supra* note 12, at 862 (exposing lack of regulation of abandoned DNA use and collection). "In cases involving 'abandoned DNA,' however, the police have been able to retrieve the most detailed genetic information, without being subject to the criminal procedure rules that normally apply to searches and seizures." *Id.*; *cf. supra* note 49 and accompanying text (summarizing Massachusetts's position on expectation of privacy in DNA).

278. *See* Joh, *supra* note 12, at 860-61 (explaining dangers of allowing law enforcement to collect abandoned DNA); *see also supra* note 62 and accompanying text (discussing police investigative techniques when using abandoned DNA).

279. *See* Tehrani & Mednick, *supra* note 166, at 24-26 (considering possibility of link between genetics and crime).

280. *See* Joh, *supra* note 134, at 682-87 (highlighting importance of criminalizing nonconsensual analysis of DNA).

281. *See* Suter, *supra* note 10, at 803-11 (explaining dangers of treating DNA as property).

282. *See supra* Part II.B.2 (comparing property and privacy protections for DNA).

283. *See* Gruber, *supra* note 139 (stressing need for comprehensive legislation to protect genetic information); *see also* Joh, *supra* note 12, at 866-68 (arguing abandoned DNA should invoke Fourth Amendment protection).

284. *See* Huber & Vorhaus, *supra* note 131 (noting efficacy of Massachusetts GBR limited by geography); *see also* Blakesley, *supra* note 173, at 606-07 (discussing federalist system's impact on fragmentation of United States criminal procedure).

285. *See supra* notes 177-179 and accompanying text (explaining difference between application of forum and situs state criminal procedure laws).

286. *See* Commonwealth v. Cryer, 689 N.E.2d 808, 813 (Mass. 1998) (holding Massachusetts's Article Twelve rights do not extend to out-of-state police misconduct).

crime is committed in Massachusetts, and the suspect is located out of state, DNA collected from the suspect would still be admissible at trial in Massachusetts, even if the out-of-state police collected the DNA in violation of the GBR.[287] The DNA sample would be admissible, even though it violated the GBR, because of the policy considerations behind the exclusionary rule.[288] Courts exclude unconstitutionally seized evidence in order to deter police misconduct.[289] In a situation where DNA is collected by out-of-state police, in violation of the GBR, suppression of the DNA would not have a deterrent effect on Massachusetts police because they did not collect the evidence.[290] A Massachusetts court would further reason that out-of-state police cannot possibly be expected to know and follow Massachusetts law.[291]

The Massachusetts GBR would also not apply to Massachusetts police collecting evidence in Massachusetts to be used in an out-of-state trial.[292] If Massachusetts criminalizes DNA theft, then it would likely be considered a defendant-protective situs state.[293] Similar to the situation in *Miller*, if a Massachusetts resident is suspected of committing a crime in another state that does not criminalize DNA theft, and Massachusetts police collect his DNA in violation of the GBR, his DNA sample would still be admissible at an out-of-state trial.[294] An out-of-state court would likely follow the general rule that the law of the forum state governs as to procedure and admissibility of evidence.[295] The out-of-state court would emphasize that it has a superior interest in

287. *See supra* notes 187-192 and accompanying text (explaining circumstances when Massachusetts rights do not apply at trial in Massachusetts).

288. *See Cryer*, 689 N.E.2d at 813 (stating court's reasoning for not applying Massachusetts law to out-of-state police conduct).

289. *See* Commonwealth v. Amral, 554 N.E.2d 1189, 1193 (Mass. 1990) (explaining policy behind exclusionary rule).

290. *See supra* notes 194, 197 and accompanying text (discussing application of exclusionary rule in context of conflict-of-laws analysis).

291. *See* Corr, *supra* note 178, at 1228-29 (acknowledging reality of difficult police work).

> In the best circumstances, the police have a rather formidable task. Even when the only exclusionary rules they must learn are those of their own state plus applicable federal rules, it must be difficult for individuals with little formal legal training to track the twisting, confusing course of judicial decisions that regulate searches and interrogations. The problems increase geometrically if police are also required to know the law of other potentially interested states.

Id. at 1229.

292. *See supra* notes 197-204 and accompanying text (considering scenario where situs state criminal procedure provided more defendant protection than forum state).

293. *See* Joh, *supra* note 134, at 686-87 (surveying states with DNA theft laws). Only ten states have passed laws that could potentially be considered to criminalize DNA theft. *Id.* at 686.

294. *See* Commonwealth v. Miller, No. 01 77 CR11 69-001, 2002 Mass. Super. LEXIS 237, at *5-9 (Mass. Super. Ct. July 9, 2002) (applying forum state law despite greater protections offered by situs state law).

295. *See* Burge v. State, 443 S.W.2d 720, 723 (Tex. Crim. App. 1969) (articulating general rule in conflict-of-laws analysis); *see also* People v. Saiken, 275 N.E.2d 381, 385 (Ill. 1971) (explaining "significant relationship" test for determining whether forum or situs state laws govern admissibility).

prosecuting crimes committed within its borders.[296] The GBR's ineffectiveness in out-of-state trials might also cause Massachusetts police to intentionally ignore the GBR, if the police know that a crime will be tried under a different state's laws.[297] As a result, any GBR in Massachusetts would be greatly undermined by other states' less protective and conflicting laws.[298]

IV. CONCLUSION

DNA exposes volumes of intimate information about an individual's genetic composition. The most frightening aspect of DNA is that scientists are still trying to understand its significance. There is uncertainty as to what types of information DNA could potentially reveal about an individual, such as an individual's propensity to commit crime, become an alcoholic, or abuse drugs. DNA could even predetermine an individual's intellectual and physical capacity. The unknown information that DNA could potentially reveal is frightening.

The intent behind the Massachusetts GBR is admirable. In a world where technology is advancing at lightning speed, there is a vital need to protect genetic information from misuse. One of the most valued principles in the United States, implied in the Fourth Amendment, is the right to be left alone. Americans are free to make their own decisions about what career to pursue, whom to marry, where to live, and how to conduct their daily lifestyles. Without legislation protecting the privacy of genetic information, it could be used to predetermine every aspect of an individual's life.

Nevertheless, appropriate legislation protecting DNA must not treat an individual's DNA as a commodity. Instead, DNA should be protected by privacy law in order to preserve an individual's bodily integrity and unique identity. Effective legislation would not permit exemptions for law enforcement because, as the history behind the Fourth Amendment shows, governments have a natural tendency to intrude upon individuals' privacy. Also, effective legislation would not allow an exemption for testing for a genetic predisposition to alcohol and drug abuse because that would, again, allow the government to intrude upon an individual's private life by targeting certain individuals as automatic criminal suspects. Properly drafted legislation must prohibit the analysis of DNA, not just the disclosure of the genetic information it contains, because serious harm could be done to an individual

296. *See Miller*, 2002 Mass. Super. LEXIS 237, at *11 (discussing factors considered in determining whether forum state has superior interest).

297. *See* Corr, *supra* note 178, at 1227 (suggesting harm to situs state laws when police know less protective forum laws will apply).

298. *See id.* at 1218 (opining inconsistent criminal procedure laws throughout country diminish strength of individual state laws); *see also supra* Part II.D (detailing intricacies of conflict-of-laws analysis in United States criminal procedure).

even without the act of disclosure.

Unfortunately, even a perfectly drafted GBR, enacted in Massachusetts, would still be rendered ineffective because of the inconsistencies in state laws throughout the United States. Nevertheless, just as the Bill of Rights is largely based on the Massachusetts's Declaration of Rights, a well-crafted Massachusetts GBR could pave the way for a federal GBR, which would extend to all Americans, effectively preserving the right to be left alone.

Jaclyn G. Ambriscoe